The BULLETIN

American Society of Hospital Pharmacists

SUPPORT OF SOUND [illegible] THERAPY
the pharmacist's role

KITCHENER-WATER[illegible] HOSPITAL
the pharmacy department

COMPREHENSIVE [illegible] SURVEY
of a hospital pharmacy

STERILIZATION
of pharmaceuticals

STANDARDS FOR [illegible]
for the hospital pharmacist

VOLUME 19 NUMBER 1 JAN-FEB 1953

The BULLETIN
American Society of Hospital Pharmacists

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VOLUME 10 NUMBER 1

MEMBERSHIP in the American Society of Hospital Pharmacists and the American Pharmaceutical Association is open to all practicing Hospital Pharmacists. With membership is included subscriptions to THE BULLETIN of the American Society of Hospital Pharmacists and to the two *Journals* of the American Pharmaceutical Association, as well as the several services of both organizations.

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IN THIS ISSUE

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LETTERS

Apply for Affiliation

DEAR SIRS: The members of the Oklahoma Society of Hospital Pharmacists request to be accepted by the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS as an affiliated chapter.

Enclosed you will find a copy of the Constitution and By-Laws of the Society, as presented by the Committee at a special meeting for that purpose. A motion was made and carried that the Constitution and By-Laws be adopted as presented.

Ralph Reed, *president*
Sister M. Teresa, *secretary*
Oklahoma Society of Hospital Pharmacists

DEAR SIRS: As you know, the hospital pharmacists of the Rochester Area have been organizing a group. We have had several meetings and would like to become a chapter of the national organization.

MYRNA WILLIAMS, *secretary*
Rochester, New York

Floor Plans Available

DEAR SIRS: Mr. Benjamin Smith, Professional Service Department, Eli Lilly and Co., has referred us to you to obtain floor plans for a one room pharmacy which we are about to organize.

SISTER M. STEPHANIE, O.P.R.N.
St. Catherine of Sienna Hospital
McCook, Nebr.

EDITOR'S NOTE: Copies of the Suggested Floor Plan for 50, 100, and 200 Bed General Hospitals have been made available by the Division of Hospital Facilities of the Public Health Service in cooperation with the Division of Hospital Pharmacy of the A.Ph.A. and ASHP.

Renew Membership

DEAR SIRS: It is again a pleasure to send my check for dues . . . May the second Decennium be as fruitful as the first.

ANNA C. RICHARDS, *chief pharmacist*
Mountainside Hospital
Montclair, N. J.

DEAR SIRS: The SOCIETY is doing a good job. Thanks.

JOHN I. WILSON
Cedar Rapids, Ia.

Appreciates Bulletin

DEAR SIRS: . . . I want to take this opportunity to tell you that I read your BULLETIN from cover to cover, and since I do not wish to miss any issue, I hope you will not fail to forward my issues to the new address.

EUGENE FRIEDMAN
Trenton, N. J.

Interested in Hospital Pharmacy

DEAR SIRS: First, I would like to congratulate the American Pharmaceutical Association on its one hundredth anniversary and wish it every success in the future.

I would also greatly appreciate receiving the names of colleges offering a course in hospital pharmacy, and also the address of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

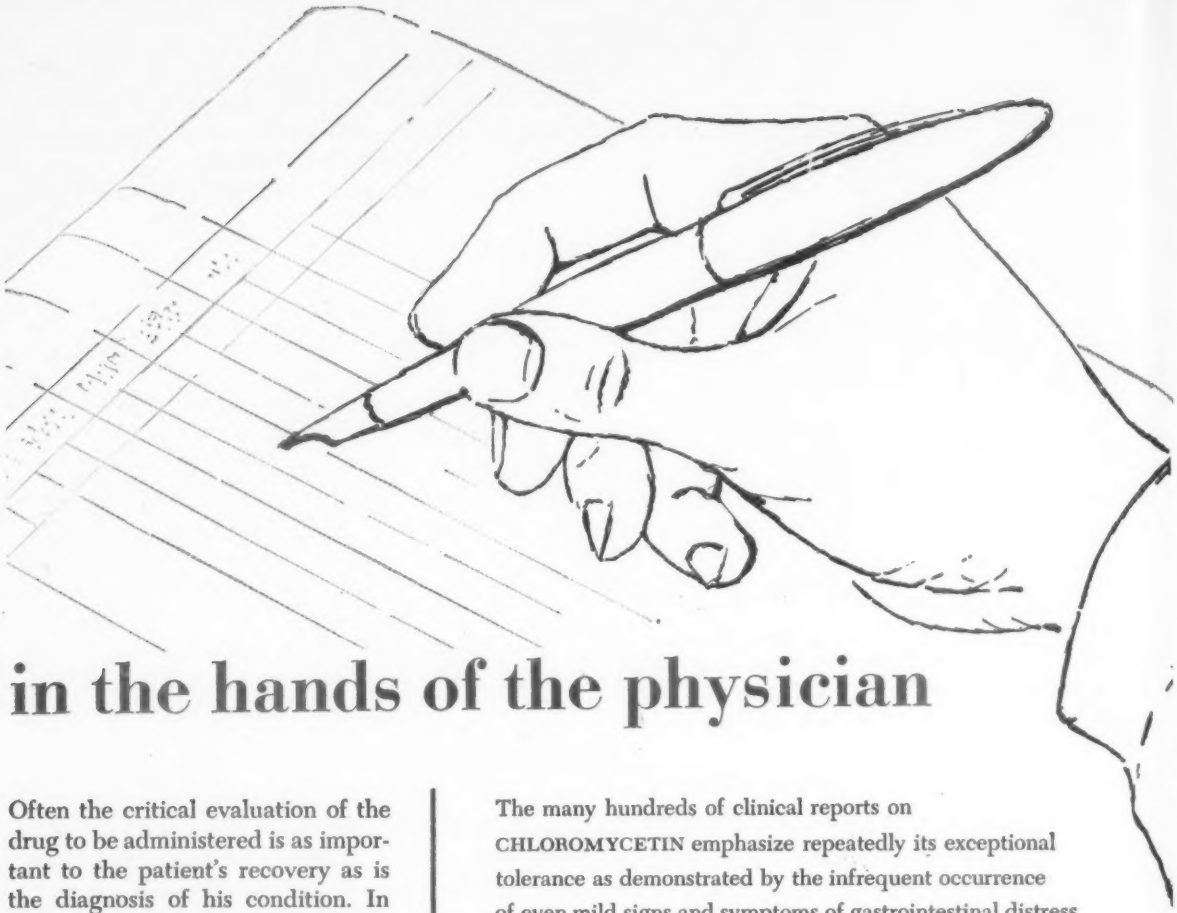
PFC. GERALD GOLD
109*th Field Hospital, APO* 541
c/o PM, New York City

EDITOR'S NOTE: Schools offering graduate courses in hospital pharmacy were listed in THE BULLETIN (January-February) 1952. Additional schools which have announced courses during the past year include University of Texas, Austin; University of Tennessee, Memphis; and Columbia University, New York City.

From Portugal

DEAR SIRS: . . . I am interested in receiving THE BULLETIN OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS which I always read in the library of "Sociedade Farmaceutica Lusitana." Also, I would like to be informed as to whether I am eligible for membership in the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS.

DR. ALUISIO MARQUES LEAL, *chief*
Pharmaceutical Department of the
School Hospital, Faculty of Medicine
Lisbon, Portugal



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The Formulary System In Hospitals

by DON E. FRANCKE

Are We To Have Socialized Pharmacy?

SOUTHEASTERN DRUG JOURNAL
September, 1952

A vicious movement, wearing a socialistic complexion, has taken root in some of our hospitals . . . which breathes a tendency not only to seriously handicap the local druggists, but to ultimately undermine the very foundation of our better pharmaceutical houses.

That movement is exemplified in the "standard formularies" being sponsored by pharmacists in many major hospitals to have the said "standard formularies" adopted for exclusive use by staff physicians.

This is not an indictment of the hospital pharmacists, generally, for it is not our considered opinion that they actually realize what a destructive force they are setting up.

Neither do we believe that they have considered the serious socialistic action in which they have unsuspectingly taken an active hand.

It is obvious, however, that the "standard formularies" procedure is being sponsored by a socialistic minority group under the guise of economy for either the hospital or the patient or both. The intent of this socialistic trend is to set up a standard list of drugs (by Numbers or Code and not by brand name) from which staff members *must* choose the medication to be given all patients.

CONSIDERABLE CONFUSION and misunderstanding exists over the use of formularies in hospitals. We are quoting two recent editorials which reflect the current attitude held by some on this subject. One of the editorials employs some form of the term *socialism* eight times in eighteen sentences, essentially every other sentence. This is done without defining a term which at times means different things to as many people but more often is used as an emotional appeal to attack or condemn something with which one disagrees.

Let us examine some of the questions raised in these editorials.

Are Trade Names Excluded

Are trade name drugs excluded from medical practice in hospitals under the formulary system? Anyone who has taken the time to review the basic concepts upon which the system has been established and to examine a number of representative hospital formularies knows this is not true. How, other than by the use of trade name drugs, could modern medicine be practiced? Everyone recognizes that our major pharmaceutical houses spend millions of dollars in the development of new therapeutic agents. These in turn come under their sole proprietorship for a period of seventeen years during which time they alone derive the material returns for their efforts. No one challenges and no one begrudges the right of these companies to benefit from the results of their truly creative research in developing new basic drugs. These, of course, are marketed under trade names and any trade name drug which represents a basic advance in therapy can and, as a matter of course, is used in hospitals which employ the formulary system. It is true that hospital formularies, like the U.S.P., the N.F., the N.N.R., and the I.P., also employ the generic name of the drug as a matter of policy; but this in no way interferes with the use of the trade name drug in the hospital.

We have been discussing trade name drugs which arise from basic research and which result in the creation of new basic drugs which represent additions to the therapeutic armamentarium and whose use results in better patient care. However, there are other types of trade name drugs. These fall into two principal categories, both of which are readily available in commerce and therefore highly competitive: basic drugs, as for example digitoxin or penicillin; and combinations of basic drugs, as for example phenobarbital and belladonna alkaloids, aminophylline, ephedrine and a barbiturate, or penicillin and streptomycin. Such drugs are available both singly and in a seemingly never ending series of combinations under a multitude of trade names. Although there are exceptions, these products do not generally represent advances in therapy for the benefit of the patient; but are, rather, products duplicating a great many others on an already overcrowded market. It is these items which are product duplications to which hospital pharmacists object, as do those in retail practice.

The difference is that in hospitals the pharmacist and physician can work more readily as a professional team and by democratic processes consider the problem objectively and arrive at the type of rational solution characteristic of those trained in the sciences. This can be done only in an environment where mutual confidence and respect exist between the physician and pharmacist and where it is clearly understood that there is no desire to abridge the professional prerogatives of the physician.

But again, does this mean that no trade name drugs, even though they be product duplications, are used in our hospitals? Of course not, as is again evident from the examination of hospital formularies. How-

These items are usually purchased by the hospital, not from the better pharmaceutical houses, but from so-called "packaging outlets" whose whole existence is premised upon the theory of offering "something just as good for less." In fact, however, we have observed that hospitals are charging their patients higher prices for these "standard formulary" items than the retail druggists would charge them for the better brands of medication.

So it is easy to see where this system would lead, if it received wide-spread adoption among all our hospitals. Sooner or later the effect would be so alarming that many of our better pharmaceutical houses would experience severe financial and sales pains. This would forecast a gradual breaking up of research, which requires heavy financing, and heavy financing can only be had by large sales. It is also obvious that retailers would suffer right along with the manufacturers.

This socialist promotion of a system that has never been good for any of the foreign countries, where it has been tried, must therefore be condemned and cleaned out of our hospitals before it reaches a more serious stage.

Hospitals and their pharmacists who are promoting the "standard formularies" can receive no sympathy from retail druggists and certainly not from a publication, such as Southeastern Drug Journal, who represents the retail druggists.

The movement simply revives, under a new face, the active trend for socialization of medicine, and that trend the doctors of this country licked simply by shucking their coats and waging a fighting battle.

We can have no socialization of pharmacy in this country. And we believe that by calling this to the attention of staff doctors, they will realize that after socialization of pharmacy will come socialization of medicine. Thus these staff doctors will refuse to participate in "standard formularies" promotion—unless they are over a barrel, which would be a serious thing.

ever, product duplication is handled, not by eliminating trade names *per se*, but rather by the adoption of basic drugs under their generic names, as for example, isoniazid and penicillin sodium. This does not mean, for instance, that Cotinazin, Dinacrin, Ditubin, Nydrazid, Rimifon or other trade names are not used in hospitals under the formulary system. In fact, needless to say, they are used. But rather than making each of them available, a selection is made and the results of this selection have nothing to do with the fact that one or more may bear a trade name. The important point is that no physician is deprived of the use of this basic drug in his practice.

The method of handling combinations of basic drugs is similar. Here the problem of product duplication is even more acute and while it is a practice engaged in by all pharmaceutical companies, it exists to a greater extent among some companies which contribute little or nothing to basic research. It might also be mentioned that pharmacists are educated and trained to prepare satisfactory dosage forms of certain drug combinations and that this is not outside the province of the well-trained hospital pharmacist.

The Hospital's Problem

Thus these two classes of drugs, basic drugs available under several trade names and combinations which are in fact duplications of other companies' products, do present certain problems to manufacturers who sell to hospitals and in the same manner they present problems to hospitals which purchase from manufacturers. The enormity of this problem is shown by a study made by Paul de Haen and quoted by J. Solon Mordell. This study reports on pharmaceutical products introduced in the years 1948 through 1951. The 1951 summary, shown below, is also illustrative of the preceding years.

			Duplications of	
Firms	Products	Basic Drugs	Basic Drugs	Combinations
86	332	35	74	221

There is no need to discuss the complexity of the problem so clearly portrayed by these figures. And this is true particulary when their cumulative effect is considered. Is it amiss that physicians and pharmacists in hospitals attempt cooperatively to bring order out of chaos?

The necessity for some type of cooperative approach by physicians and pharmacists to solve this mounting problem is emphasized by the following quotation from the 1949 report of the Council on Pharmacy and Chemistry of the American Medical Association.

A fundamental requirement to successful treatment is that the physician have the clearest possible understanding of the remedial agents that he prescribes. This is difficult at best, and is rendered increasingly difficult with multiplications of agents that are nearly but not quite equivalent. Each may show minor differences, which may or may not be practically important, but which are difficult to learn if he spreads his experience too widely and therefore too thinly. . . . There is another side to the argument, however, for few if any therapeutic agents are ideal. Improvements, increased efficiency, fewer side actions, and lower toxicity should be sought for. Skillful experimentation in this direction should be encouraged, not obstructed, but this thorough experimentation should precede the introduction into medical practice. It were better, much better, for medical practice . . . if modifications which do not offer substantial advantages were shunted into the discard before they see publicity and add to the confusion of practitioners.

Even under these circumstances, it does not mean that these products will not be used in hospitals, but it does mean that manufacturers will have a different pattern of distribution in hospitals than they do in retail pharmacies. However, this does not work to the detriment of any of the reputable pharmaceutical houses. The net result is that a smaller number of items of any given manufacturer

Hospital Drug Lists

DRUG TRADE NEWS
Feb. 18, 1952

The growing use of hospital formularies, which purport to list the drugs and preparations available to the physicians on the hospital staff, shows indications of creating some special problems for the manufacturer of prescription medication. When these formularies are designed to facilitate prescribing from a more or less routine list of drugs and medicines, the use of the formulary may be of advantage to all concerned.

But, as is true in many instances, when the formulary is intended to exclude new prescription products as they come along, or make it very difficult for the physician to obtain them for his patients, the formulary may be detrimental to good medical treatment.

Medical care of the highest order is utterly impossible without the use of the drugs and medicines which modern research scientists make available. Any hospital which closes its doors to such products or erects an iron curtain against them, can hardly claim to provide medical services of the required quality.

will be carried; but on the other hand, the volume of business on these items will be relatively large. Of course, each firm may wish to sell a large volume of each therapeutic agent in its entire line to hospitals. But is this a realistic attitude?

From Whom Are Drugs Purchased

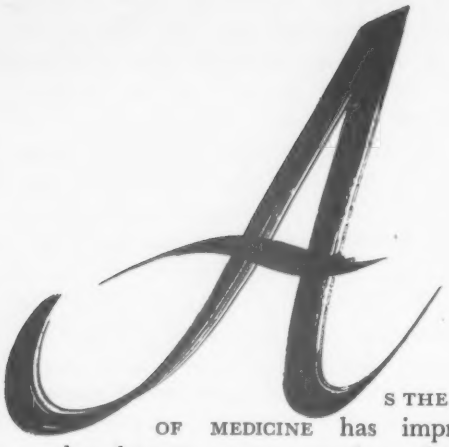
This leads us to another question. Do hospital pharmacists tend to purchase from "packaging outlets" rather than from reputable pharmaceutical houses? To answer this question one must also ask another: What are the basic tenets of a professional individual which guide him in his choice? Are they not that each man is a debtor to his profession and that in obtaining drugs for the sick one does not sacrifice quality for price? These questions are more important than they may seem at first glance because, as Dr. Edward Elliott wrote after concluding the comprehensive Pharmaceutical Survey, "The outstanding factor determining the future of the profession of pharmacy is fundamentally moral in nature."

Let us examine the first question. Does the hospital pharmacist hold himself a debtor to his profession? As Dr. George Urdang has pointed out, the hospital pharmacist was the first recognized representative of the art and science of pharmacy, and it was in hospitals that the separation of pharmacy from medicine first took place. Furthermore, there is no group in American pharmacy whose consciousness of professional responsibility surpasses that of the hospital pharmacist. In evidence, note the staunch support that hospital pharmacists as a group give to the American Pharmaceutical Association in its efforts to raise the standards of pharmaceutical practice ever higher. They do not ask "What benefits do we derive from supporting pharmacy's national professional organization?" Rather, they are content to contribute that which is in their power to give so that the profession as a whole may render better pharmaceutical service and to receive as dividends that sense of satisfaction which comes to every professional person who does his share.

With this background in mind, is not the result inevitable that hospital pharmacists would patronize those pharmaceutical firms which also hold themselves a debtor to our profession? This means those firms which develop new basic drugs through research; which support education and research in our schools of pharmacy and medicine; and which in one form or another champion the overall professional objectives of the A.Ph.A. and the ASHP. Thus the hospital pharmacist is spontaneous in his support of those who maintain the same general type of professional ideals that he does. And this he does, keeping in mind his responsibility to the institution for which he works as well as his obligations as a professional man. This does not mean that we eliminate competition, but rather that we encourage competition among those pharmaceutical firms which specialize in quality products.

We are not so naive as to believe that there are no exceptions to these statements among hospital pharmacists, nor to believe that all so-called better pharmaceutical houses act in all ways in such a manner as to merit the support of professionally minded pharmacists. A few still value the emoluments of the market place so highly that they are content to take all that can be gotten from the profession but assume little responsibility for their share in helping the profession advance. But these, fortunately, are the exception.

The formulary system is one aspect of medical staff self-government which was formalized in 1936 when the American College of Surgeons adopted the first *Minimum Standard for Pharmacies in Hospitals*. Organizationally, the Pharmacy and Therapeutics Committee, which is responsible for the formulary, is a subcommittee of the medical staff and its recommendations are subject to approval by the staff as a whole. It is not, as some imply, a dictatorial device sponsored by a "socialistic minded minority group." Upon final approval, the formulary forms the basis of one policy of hospital operation. One of the objectives of this policy, approved by the medical staff, is to meet the problem of product duplication as far as possible. This is done not only in the interest of rational therapy, but also to foster sound teaching practices as well as economy. We do not believe that it works to the detriment of the patient, the physician, the reputable pharmaceutical houses, or to pharmacy as a profession.



S THE PRACTICE OF MEDICINE has improved, it has become more complex. One of the effects of the change has been increased and better use of consultation and coordination within the field of medicine itself. Another effect has been the development of closer and more meaningful teamwork between the physicians and the representatives of related health professions such as pharmacy and nursing. We feel that the role of the hospital pharmacist has become increasingly significant and that it can and should become even more contributory in the future.

The professional interdependence of medicine and pharmacy has been on sound foundation for quite a long time. We should like to invite your attention to a wholesome working relationship which we have seen develop, in the hope that you may find it helpful in your attempts to achieve the greatest possible professional satisfaction in carrying out your role as a co-worker in the field of health.

Importance of Rational Drug Therapy

As a prelude to the more definitive discussion of this topic it may be helpful to review briefly the recent past history of the field of drug therapy as seen through the eyes of some of our most competent observers.

by J. SOLON MORDELL *and*
C. K. HIMMELSBACH, M.D.

An editorial[1] in the *Journal of the American Medical Association* in May 1930 stated:

> The hospital, as one factor in medical education, should afford unusual opportunities for enhancing rational drug therapy. There particularly may products be submitted to critical inspection. As Sollmann so pointedly remarked at the recent Congress on Medical Education, the 'evaluation of therapeutic remedies is not usually among the features to which hospital authorities point with just pride of achievement.' The hospital drug room, which reflects directly the medicinal requests of the staff, has hardly kept pace with the modernization of other departments of the hospital. . . .
>
> Unfortunately, progressive 'teaching' methods are not carried out in the hospital where the graduate is an intern. Not infrequently, irrational fixed prescriptions are written by the 'chief' of a service, who in turn may have had them bestowed on him when he was an intern. The staff physician may carelessly prescribe a drug under a name he remembers best. . . . .

The following statement was made in a paper by Dr. M. S. Dooley and Dr. E. C. Reifenstein, entitled "Rational Drug Therapy in Hospitals:"[2]

> There is far too little correlation between pharmacology and drug therapy at the bedside. The main reasons are defective teaching, a major weakness in medical education which fails to keep physicians informed about the pharmacological action and standard nomenclature of drugs prescribed. As students and, subsequently, as practitioners they had, and have the ordeal of trying to learn myriads of drugs. Experience teaches that they miss adequate knowledge of the few of merit. Such thinly spread teaching and learning about hosts of drugs permeates the whole curriculum and medical practice in spite of available scientific criteria for charting drug actions in the clinic which make it possible, in most instances, to shun useless and irrational therapy. The results are particularly reflected in notoriously disreputable pharmacy stocks. . . . Many pharmacies, luxurious in appointments, stock scores of questionable drugs.

As recently as February 1949, the *Journal of the American Medical Association* in a report of its Council on Pharmacy and Chemistry,[3] stated:

> A fundamental requirement to successful treatment is that the physician have the clearest possible understanding of the remedial agents that he prescribes. This is difficult at best, and is rendered increasingly difficult with multiplication of agents that are nearly but

J. SOLON MORDELL, Senior Pharmacist, U. S. Public Health Service, is Drug Specialist in the Division of Civilian Health Requirements, Office of the Surgeon General. Formerly chief, Pharmaceutical Service, U. S. Public Health Service Outpatient Clinic, Washington, D.C.

C. K. HIMMELSBACH, M.D., Medical Director, U.S. Public Health Service, is Medical Officer in Charge, U. S. Public Health Service Outpatient Clinic, Washington, D. C., Division of Hospitals, Bureau of Medical Services.

Presented at the annual meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, Philadelphia, Pa., August 21 and 22, 1952.


The Hospital Pharmacist's Role
in the Support of
SOUND DRU
THERAPY

not quite equivalent. Each may show minor differences, which may or may not be practically important, but which are difficult to learn if he spreads his experience to widely and therefore too thinly . . . Two examples that come to mind are the estrogenic preparations and the 'antihistaminic' drugs. In both cases, synthetic chemistry is able to produce practically numberless agents. Both fields are already crowded and overcrowded, but new agents are still being introduced at an alarming rate which makes it practically impossible to acquire the experience that is necessary to determine what advantages, if any, they possess over the older similar agents. There is another side to the argument, however, for few if any therapeutic agents are ideal. Improvements, increased efficiency, fewer side actions and lower toxicity should be sought for. Skilful experimentation in this direction should be encouraged, not obstructed, but this thorough experimentation should *precede* the introduction into medical practice. It were better, much better, for medical practice and probably for financial dividends, if modifications which do not offer substantial advantages were shunted into the discard before they see publicity and add to the confusion of practitioners. . . .

The editorial continues with suggested criteria for acceptance of additional antihistaminic drugs and concludes as follows:

The Council agrees fully that some such criteria should be applied to all fields that are becoming overcrowded, but the Council believes that it would be much better if this is done by voluntary action of the individual manufacturers, rather than by the fiat of any central agency. The latter could easily tend to stifle legitimate and useful competition by cooperative manufacturers, while the less conscientious would go ahead and modify or pirate without Council acceptance. The Council therefore refers the problem to the good sense of the manufacturers who value the respect and good will of the medical profession.

Even more recently, on June 28, 1952, the *Journal of the American Medical Association* published an editorial[4] in which appeared the following statement:

New therapeutic agents, which are being introduced with ever increasing rapidity, are characterized not infrequently by their beneficial or life-saving qualities but also by their ability to cause injury or serious side-effects. A calculated risk is involved whenever one prescribes any medication. The physician is confronted constantly with the difficult task of determining whether the use of a given drug is likely to do more good for a particular patient than any possible harm. In spite of the vast amount of laboratory and clinical study that a new drug usually undergoes before it is placed on the market, subtle or insidious toxic effects, often of a serious nature, frequently are not recognized and brought to the attention of the medical profession in general until after the drug has been on the market for some time and has enjoyed widespread clinical use. A propensity to cause injury to the hematopoietic system is particularly likely not to be generally appreciated until a new drug has undergone extensive use for a considerable period of time.

It may appear from these statements that drug therapy as a sound science is in a state of confusion. This is not really the case. Perhaps what we're suffering from is a profusion of products with confusion of purpose and occasionally a delusion of effect. Drug therapy often is not the exact science we'd like it to be. Yet, in contrast to the thousands of years of empiricism, and, in the nineteenth century, the skepticism as to the real role of drugs in treating disease, drug therapy has grown in scientific stature. More knowledge of the biologic sciences and of chemistry and physics, has provided us with the means for applying the kind of rational thinking which is the basis for a more scientific approach—the type of thinking which enables the individual to be objective and to form logical conclusions from what he perceives. One is better able now to make a distinction between fact and fancy.

Need For Clinical Assessment

But let us not delude ourselves—the art of medicine is as important as the science of medicine. This applies to drug therapy as well as to other aspects of practice. However, with sounder bases for the art and the science, now we can apply both principles better; we can distinguish more adequately between them; and, from the standpoint of therapeutics, we can achieve a more satisfactory fusion of the art and the science.

With the growth of drug therapy along scientific pathways comes the need for improved clinical assessment. The problem is to devise the method whereby the physician and dentist may be assisted in the difficult task of selecting suitable agents from the multiplicity of drugs and drug preparations which confront them. Valuable sources of information are such texts as *New and Nonofficial Remedies, Reports of the Council on Pharmacy and Chemistry of the American Medical Association, Accepted Dental Remedies,* and *Useful Drugs.* In many hospitals, formularies and other types of drug listings have been compiled. These listings, good as they may be for the purpose, generally serve only as convenient references to indicate the items available in the individual institution. They often lack the important features of selectivity and simplification based on fundamental scientific clinical pharmacology. Furthermore they often lack the kind of basic standardization—and we use this word "standardization" fully conscious of the risk involved—needed to create an orderly approach to sound drug therapy.

Yes, standardization often is a word abhorred. But the fear of standardization really is the fear of the inflexibility that usually is inferred. Any

plan in the direction of rationalization, even though it requires some basic restriction, must also be flexible. If this one concept is not understood and is not kept indelibly in view, no plan will work. It won't work because on the one hand we are dealing with a dynamic field in which changes occur rapidly. On the other hand, compulsive adherence to standards leads to defeat of initiative and to stultification of the kind of thinking that this approach is designed to encourage and promote.

You may be interested to note a survey[5] made by Paul deHaen from a number of trade and medical journals, of pharmaceutical products introduced in the years 1948 through 1951. Of 322 pharmaceutical products introduced by 86 firms in 1951, there were 35 different single chemicals, or 11 percent of the total; 74 instances of duplication of single chemicals, or 23 percent of the total; and please note this: 211 compounded items, or 66 percent of the total. In addition to these products there were 120 new dosage forms. Here is evidence of how the word "new" has been abused in this field. We must therefore distinguish between what is really new in the sense that penicillin in 1943 was new, and a mixture of the old under a new name, or even the duplication of the new under other names. We do not know at what rate drugs become obsolete and no longer available, but we feel certain that the net effect each year is more and more drugs on the market. Thus the state of confusion is compounded and discriminate selection becomes increasingly difficult by virtue of numbers alone.

sample page from

basic drug list

Chapter 7.

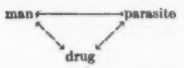
SYSTEMIC ANTI-INFECTIVES

Anti-infective agents given internally are included under this major classification. For convenience, these systemic anti-infectives have been grouped as follows:

Anthelmintics, Antibacterial drugs

Antibiotics and Sulfonamides, and Antiprotozoan drugs

The selection and use of these drugs are bound up in a trilogy of actions and interactions which may be depicted as follows:



The ideal anti-infective drug destroys the parasite without harm to man, the host. The criterion of selection is that of closest approach to this ideal.

ANTHELMINTICS

Anthelmintics are used to rid patients of intestinal and tissue parasites. Presently available anthelmintics stun rather than kill parasites, require that definite precautions be taken to safeguard the health of the host, tend to be more effective against certain parasites than others, and require that provision be made for evacuating the intoxicated parasites before they recover. Accordingly, the procedure of divorcing parasites from host involves provisions for: (1) definitive diagnosis; (2) maximum exposure of the parasite to the drug through prior removal of protective mucus and feces (by fasting and purgatives) without unduly weakening patient or facilitating absorption of the anthelmintic; (3) administration of the vermicide considered to be most effective against the particular parasite, *if clinical judgment indicates that the patient will tolerate it;* if not, compromise; (4) expelling the parasites and anthelmintic with a cathartic which correlates the locus of the parasites with site and time of action of the cathartic, and which will not facilitate absorption of the vermicide; (5) sanitary disposition of evacuated material; and (6) checking the patient for effectiveness of the procedure.

While any cathartic is a vermifuge, magnesium salts have certain advantages because oily cathartics often facilitate absorption of the anthelmintic and tend to increase the toxicity for the patient.

The more important parasites (helminths) classified as follows: [1]

The Approach

How can we help to make some order out of this? The obvious approaches would appear to be: (1) to develop and to keep alive a standardization of basic clinical pharmacology as the keystone of discriminative drug therapy; (2) to encourage the use of those good tools readily at hand, that is, the official texts, *New and Nonofficial Remedies,* and *Accepted Dental Remedies,* as a stepping stone to such standardization; and (3) to enhance closer professional working relationships among the physician, the dentist, and the pharmacist.

One of the earliest, if not the earliest organized programs aimed at collaboration with the physician in the objective selection of drug agents was conceived in 1927 in Syracuse, New York. Dr. M. S. Dooley, then director of the department of pharmacology of the Syracuse University College of Medicine, and now emeritus professor, provided the inspiration and guidance in this pioneering action to clear up what was a chaotic situation. The plan was set in motion in 1932 at the Syracuse University Hospital. In the early days, the idea of hospital pharmacy practice in association with a pharmacy committee was relatively new. As time went on, more and more hospitals adopted the pharmacy committee idea until today it is accepted by a large number of institutions as an integral part of their professional operations. No little part was played in this movement by the historic 1937 *Report of the Committee on Pharmacy of the American Hospital Association.* A significant portion of that report was related to the experience at Syracuse in improving the whole system of drug therapy.

A similar plan of reorganization of drug therapy procedure was instituted at The New York Hospital in the Cornell University Medical Center. Publication of their therapeutic conferences has provided a significant contribution to the literature on this subject.

A Basic Scope of Drugs

In the autumn of 1948, the Division of Hospitals in the Bureau of Medical Services of the United States Public Health Service initiated the preparation of a handbook which was to be not merely a list of items in the manner of the traditional formulary, but primarily the embodiment of the principles of a sound but flexible system of drug therapy in its eighteen hospitals and twenty-two outpatient clinics. The goal was improved therapy —a goal to be accomplished by cooperative effort which would discredit any implications of interference with personal prerogative.

Thirty-four officers representative of medicine, dentistry, and pharmacy contributed to the development of this program as presented in the finished text entitled *Basic Drugs*: *U. S. Public Health Service Hospitals and Clinics*, to be available early in 1953. The Pharmacy Committee at the U. S. Public Health Service Outpatient Clinic in Washington, D. C. spearheaded the task, with close support by the Pharmacy Committee of the U. S. Public Health Service Hospital at Baltimore, Maryland and pharmacy committees of other Service hospitals. Consultation was had with authorities in a number of leading universities and teaching hospitals.

Criteria

The main objective was to select the best, simplest, fewest, and safest medicines currently needed in the prevention, diagnosis, and treatment of illnesses. We found that our chief task resolved itself into the elimination of duplication and overlapping rather than the sorting out of the good from the bad or indifferent. As stated in our memorandum of transmittal, "This often was a difficult and time consuming process—especially when it involved giving up a favorite drug one of us had utilized successfully over a period of years! However, as one might expect, it was in those areas where fundamental knowledge is not yet truly adequate and where differing views are advanced by the 'experts', that most of our difficulties arose. In certain of such areas, we are not yet happy over the product because it represents compromise; in others we were forced to leave the matter 'up in the air'."

The following criteria were utilized in the selection of drugs:

1. The primary consideration is the therapeutic efficacy of the drug. Within this criterion, preference is given to *United States Pharmacopeia, National Formulary, New and Nonofficial Remedies,* and *Accepted Dental Remedies* items.
2. Unnecessary duplication is avoided.
3. Drugs of secret composition are not considered.
4. Mixtures are included only when they provide substantial advantage over the individual components.

Approaching The Problem

In approaching the problem of selection, attention was given to the drugs representative of the various pharmacologic or therapeutic groups. For example, in the case of the barbiturate drugs, the first step was to obtain agreement as to the therapeutic needs to be met. It was agreed that, within definable limits, there is need for a long acting barbiturate, one of intermediate duration, and one of short duration. With our selection criteria in mind, the next step was the choice of the drugs themselves. The drug for long action was phenobarbital; for intermediate action, pentobarbital sodium; and for short action, secobarbital sodium.

Let us examine some of the features involved in the deliberations over this therapeutic group. First, the basic proposition of duration of action. This was rather self-evident. Allowance was made for the fact that differentiation as to duration, especially as between intermediate and short, is not absolute. Barbiturate drugs are notorious for their erratic action among individual patients. A 15-milligram dose of phenobarbital taken by one individual may last as long as a 30-milligram dose taken by another. Also, 15 milligrams may have a much greater sedative effect in one patient than a similar dose in another patient. However, taking average effect, there is basis for the three chosen categories of duration. With respect to the choice of drugs, we have a good illustration in this group of the kind of sorting out required when there is a multiplicity of similar agents. Phenobarbital was the logical choice for the long-acting drug. Pentobarbital sodium, by reason of the years of experience with it and its U.S.P. status, was the choice for the intermediate agent. Lacking an official drug in the short-acting group, the N.N.R. drug secobarbital sodium was chosen because of its record of satisfactory use.

Now, having adopted these three sedative drugs as our base, the staff is provided with three drugs which should meet most presently known requirements in the field of barbiturate therapy. (This is exclusive of the ultra-short acting drug, thiopental sodium, used for intravenous anesthesia.) Thus there is an opportunity to work with three drugs intimately. Some time in the future, a significant number of physicians may find that one of the drugs doesn't do all that is expected. This is the kind of opinion that usually has meaning. It is an opinion arrived at by close observation of the drug. It is an opinion one cannot form easily or

reliably when a large number of drugs of like nature are used without regard to relative advantage and the unnecessary duplication which may exist. The Pharmacy Committee and the clinician as well now have a basis for evaluation of the drug. They may look for a replacement, or possibly a supplementary drug. They may even find that the agent in question, in spite of its shortcomings, is the best available and should be retained. Thus, the whole approach has been scientific, objective, and independent.

Additions and Deletions

The treatment given the barbiturate group illustrates what was done throughout the other groups. The items finally selected form the basis for the pharmacy supply of drugs and drug preparations. Except for nonbasic drugs temporarily on hand for investigational or other special, authorized purposes, the drug supply does not go beyond the basic scope.

As stated before, the objective was to select the best, simplest, fewest, and safest medicines currently needed in the prevention, diagnosis, and treatment of illnesses. Changes in the way of additions or deletions are to be expected, and the clinician is encouraged to make proposals for changes. A request, countersigned by the chief of the service, is submitted in writing through the chief of the pharmaceutical service who places it on the agenda for a forthcoming Pharmacy Committee meeting. If the prescriber finds it necessary to use the drug before the scheduled committee discussion, a small supply is obtained for the particular patient. This assumes that none of the available drugs have been considered adequate for the purpose and that there is no immediate serious objection to the proposed drug. Further use will depend on committee action. At the meeting, the clinician who made the request discusses the drug and the reasons for wishing to include it. A general discussion follows and the vote of the committee may be acceptance, denial, or tentative acceptance for a trial period.

Prescriber's Freedom Maintained

This procedure does several things. (1) It maintains freedom of action for the prescriber, within the framework of a basic drug scope. (2) It encourages the prescriber to think through the reasons for wishing to add drugs or to change previously accepted ones. If the proposal cannot stand on its own merits in a free discussion among colleagues, there should be little regret about its demise. (3) It avoids cluttering of drug stocks with items asked for at will and which may remain unused. (4) The adopted scope as presented in the handbook provides a standard of comparison for the evaluation of new therapeutic agents. (5) Finally, the adoption of a basic scope and the procedure for going beyond it help provide the patient with the best in the way of sound drug therapy.

Validity of Method

Two examples may serve to illustrate the validity of this approach. The surgeons have need for a safe, reliable relaxant of skeletal muscle. A proposal was made that a new drug reputed to have such effect be given a trial for certain patients selected with the cooperation of the chief of the surgical service. About one year later disappointing results were reported to the Pharmacy Committee with the recommendation that the drug should not be stocked in the pharmacy. The surgeons also have need for a good sympatholytic agent. As in the case of the drug previously described, they tried out the agent of their choice and reported their results. In this instance, however, they were impressed with the value of the drug in selected cases, and the recommendation that it be stocked for such use was accepted.

Not only have we made additions to our basic drugs, but we have also found it necessary to delete some which have been supplanted by superior agents or which have otherwise been found inadequate.

Thus we have tried to keep our base—our point of departure—not the end, but the means to the end of the soundest drug therapy available at this time. The degree to which this is successful depends on the appreciation of the need for basic standardization, of the need to work to keep it alive and up-to-date, and of the need for mutual respect and professional coordination of the fields of pharmacy, medicine, and dentistry.

Nomenclature Problems

We would like to talk a bit about the problem of names in connection with this procedure for promoting sound drug therapy. On the one hand, we have the professional and economic problem of multiple drugs and drug preparations differing in name only. On the other hand, there is an element of safety to be considered. Please consider that it may be as important to have standard terminology for drugs as it is to have it for such factors as names of diseases, causes of death, and anatomical terms. Various texts have been devised as aids to medical terminology for the use of medical record librarians. However, when it comes to drug names, the medical record librarian has met with frustration. The situation is of much greater concern to the nurse, who has to administer drugs.

With these problems in mind, we have adopted the following system of drug nomenclature:

1. Drugs official in the *United States Pharmacopeia* or in the *National Formulary* are referred to by their official English titles. For example, Hydrous Wool Fat—not Lanolin; Methyl Salicylate—not Wintergreen Oil, nor Gaultheria Oil, nor Betula Oil, nor Sweet Birch Oil, nor Teaberry Oil!

2. Nonofficial drugs listed in *New and Nonofficial Remedies* of the American Medical Association, and in *Accepted Dental Remedies* of the American Dental Association, are referred to by the generic, non-restricted name assigned by the drug councils of the two associations. For example, Chorionic Gonadotropin, the N.N.R. generic name, is used instead of numerous names listed for this agent.

3. In some instances, an official drug such as Naphazoline Hydrochloride, having the trade name Privine Hydrochloride, or an N.N.R. drug such as Lidocaine Hydrochloride, having the trade name Xylocaine Hydrochloride, is produced by one manufacturer and is obtainable only under the trade name. Such drugs are referred to in the handbook by the official, or the N.N.R., or the A.D.R. name as the case may be, followed by the trade name in parentheses. The trade name is used in the prescription to avoid ambiguity in the case of orders given directly to the nurse. It seemed impractical and pedantic to use the official name Naphazoline Hydrochloride, for example, when the drug is obtainable only as Privine Hydrochloride. It is especially impractical in the case of ampuls bearing the label or imprint of the nonofficial name. Often the drug becomes available later under the official name, or under other trade names. Then the previously exclusive trade name is dropped so that we may return to the common base: the official name; or, if nonofficial, the nonofficial generic name.

This attention to drug names has made it possible for all concerned—physician, dentist, pharmacist, nurse, medical record librarian—to speak the same language. Secondly, in many instances it has helped to solve problems in the selection of drugs for the basic scope. Third, the pharmacist is able to discharge a professional function for which he is trained, that is, the selection of the best drug from the pharmaceutical standpoint. No longer is there need to overload the pharmacy with many brands of the same drug or drug preparation. Fourth, the physician, as far as therapy is concerned, does not have to bother with much more than the selection of the therapeutic agent and the dosage.

Importance of Pharmacist

Throughout this paper we have touched on the part played by the hospital pharmacist in this program of maintaining sound drug therapy. The success of the program depends in large measure on the professional stature of the pharmacist. To some pharmacists, as to some physicians and dentists, this type of operation may mean a departure from deeply rooted pathways of thought and action. It calls for a new perspective in the handling of drugs. It calls for basic knowledge not only of technical pharmaceutical functions but of drug action and use and the differences and shortcomings which may exist among drugs. It means an awareness, for example, that witch hazel water (which would not be included in our scope) is nothing more than alcohol, water, and a witch hazel aroma; that it will do little more than will an aqueous, fourteen or fifteen percent dilution of alcohol. What is most important, is the ability to present this type of information in scientific and, above all, unobtrusive fashion.

Goal—Improved Therapy

In the administration of this program it should be understood that the basic scope is not used as an instrument of rigid control. Essentially, it is the basis for maintaining a coordinated approach to sound drug therapy. The prescriber is not refused a drug just for the reason that it is not in the basic list. He is given every opportunity and encouragement to demonstrate his reasons for wishing to add a drug. A mechanism is provided for stating his case. The whole objective fails if the physician or dentist is in any way discouraged from questioning the existing list. This cannot be stressed too much. The goal is improved therapy, not disciplinary control.

The pharmacist who receives a request for a "nonbasic" drug informs the prescriber that the drug currently is not stocked. Several courses of action may follow. The prescriber may ask if a drug of like action is available; or the occasion may be such that the pharmacist may be able to take the initiative without offense and to suggest the available analogous drug. The prescriber may decide to use the available drug and find that it is as good or better than the one he had in mind. If that happens, it is a confirmation of our methods of selection. If there is doubt about the basic drug, the pharmacist encourages the prescriber to present to the pharmacy committee the drug originally requested. If the occasion demands, the pharmacist will offer to secure the nonbasic drug for the patient until committee action is taken, and subject to approval of the chief of the service. Once the system is in operation, members of the medical and dental services become familiar with the procedure and the rest is automatic.

The pharmacist, relieved of accumulations of unnecessary drugs, is able to focus his attention on the drugs which he knows represent the core of his activities. He is free to acquire complete

knowledge about those drugs and to consider improvements in ways of administering them. It has been suggested that this whole program should mean less work for the pharmacist. This is not necessarily the case. Let us look at one example, the cough preparations. There are almost as many cough preparations as there are coughers. Under the basic drug approach, the fundamental physiology of cough was examined and the bases for therapy determined. Ammonium chloride was selected for general liquefying and expectorant effect to aid the removal of sputum from the respiratory passages. Codeine was selected to depress the cough reflex when the cough becomes excessive or futile. Finally, potassium iodide, subject to certain contraindications to its use, was selected for liquefying especially tenacious sputum which has not yielded to other measures. The pharmacist now has the responsibility for devising suitable vehicles for these agents whenever their administration is desired in liquid form. This illustrates a situation calling for additional work by the pharmacist, since agents used previously may have been purchased instead of having been prepared in the hospital.

Open Staff Hospital

How does this system of drug therapy operate in an open-staff hospital? Usually the approved scope, previously agreed upon by the chiefs of each service in collaboration with the Pharmacy Committee, is used as the basis for drug therapy on ward service. However, it is understood that, since nothing but the basic drugs are stocked, nonbasic drugs prescribed for private patients will have to be purchased. This is accomplished without delay and in the minimum available quantity. In actual practice, physicians who attend on ward service are able to evaluate the basic drugs used and once assured of their soundness, employ the same drugs for their private patients. Soon there is a diminishing number of special purchases except for nonbasic drugs for investigational use. The critical factors involved are, first, the need for prior agreement on the part of the chiefs of each service; second, the selection of a physician as guiding hand in the program, who has an awareness of the problems to be tackled and the objectives to be achieved; and third, the collaboration of a pharmacist who has the same awareness.

Importance of Manufacturer

On numerous occasions, we have been asked as to the reaction of pharmaceutical manufacturers to this program. It should be understood that this whole approach is directed toward a logical application of drugs in the treatment of persons who are ill. The pharmaceutical manufacturer serves an indispensable function in the accomplishment of the goal. Some manufacturers have conferred with us to learn about our program. Admittedly they were interested in seeing how it would affect their operations. They were soon convinced that we were as much interested in having the opportunity of assessing new, that is, really new and potentially effective therapeutic agents as they were to bring them to our attention. If that weren't so we would be derelict in our obligation to the physician and the dentist, and to the patients we are all trying to help. As in all competitive enterprise, here too there is just as much chance for the manufacturer to gain as to lose. Proposed drugs are given every consideration. A drug finally adopted after organized, careful scrutiny has the substance and the chance of survival that otherwise may not obtain.

Conclusion

In conclusion, may we say it has been our purpose here to try to enunciate a principle of operation which we have found useful, and not to stipulate either method or content. The circumstances brought about by certain existing confusion in the field of drug therapy led us to develop method and content which meet our particular needs. Yours may or may not be different, but we believe the underlying principle to be broadly applicable. The reaction of medical practitioners to the effects of this cooperative program of sound drug therapy leads us to believe we are on the right path. Above all, to the practitioners of the profession of pharmacy is offered the opportunity for a broader, more meaningful, and more satisfying exercise of professional competency. All this to the end that you may be enabled to give your full share to the sublime function of helping the sick.

REFERENCES

1. Editorial: Selection of Drugs in Hospitals, *J. Am. Med. Assoc. 94*:1764 (May 31) 1930.

2. Dooley, M. S. and Reifenstein, E. C.: Rational Drug Therapy In Hospitals, *Hospitals 15*:42 (Jan.) 1941.

3. Report of the Council on Pharmacy and Chemistry: Too Many Drugs, *J. Am. Med. Assoc. 139*:378 (Feb. 5) 1949.

4. Editorial: Blood Dyscrasia Following the Use of Chloramphenicol, *J. Am. Med. Assoc. 149*:840 (June 28) 1952.

5. Abstracted from a quotation in *Drug Trade News*, April 28, 1952, page 26, as revised after personal communication between Mr. Paul deHaen and the authors.

KITCHENER-WATERLOO HOSPITAL

KITCHENER, ONTARIO, CANADA

by PERRIN SMITH
Chief Pharmacist

KITCHENER-WATERLOO HOSPITAL is a non-profit general hospital serving the people of the twin cities of Kitchener and Waterloo, which together comprise a total population of about 60,000 persons. The hospital is situated near the junction of the two cities and, with its grounds, occupies an entire block with the hospital facing the main street. The present hospital, completed in 1951, has a bed capacity of 437 adult active-treatment beds, 60 chronic beds and 70 bassinettes. The original hospital which is now a wing of the new hospital was erected in 1894. With a bed capacity of 150 and an addition of 50 beds in 1932, it served until the present unit was completed. The former hospital has been completely renovated and remodelled to now contain the clinical pathological laboratories, the laundry and dressing room facilities for staff. The remaining space contains approximately 60 beds and is our "Chronic Wing."

The hospital operates a training school for nursing students and is an accredited institution for the training of medical interns.

Pharmacy With Central Supply

With a view to centralizing responsibility and supervision in accordance with the well-known fact that efficiency is greatly increased by centralization of supplies as well as authority, the hospital was built with the Pharmacy and Central Sterile Supply departments as one unit, the whole being under the direction of the chief pharmacist. This plan of operation had been given a trial period of four years in our former hospital. The satisfaction and enthusiasm resulting from this trial period left no doubt in the minds of the administration and hospital commission as to the wisdom and practicability of such an arrangement.

The Pharmacy-Central Sterile Supply Department comprises about 3,000 square feet of space, of which about 1200 square feet are devoted to Pharmacy proper and which is on the second floor as shown by the accompanying sketch. This area, (where dispensing and manufacturing are carried out) is adjacent to the main Admitting Office, Emergency Operating Rooms and Dietary Department and is central to elevator service. The department was built from the blueprint stage forward in consultation with the chief pharmacist. The entire department is serviced by electric dumb-waiters which operate to utility rooms on all nursing divisions, to operating rooms and delivery rooms. The dumb-waiters are utilized solely for *deliveries from* Pharmacy—Central Sterile Supply, nothing being sent down on them. Two-way radio intercommunication between the department and other departments and nursing units facilitates requisitioning. A pneumatic tube system also facilitates requisitioning as well as deliveries of some items; also, the bulk of medications ordered may be dispatched by this means.

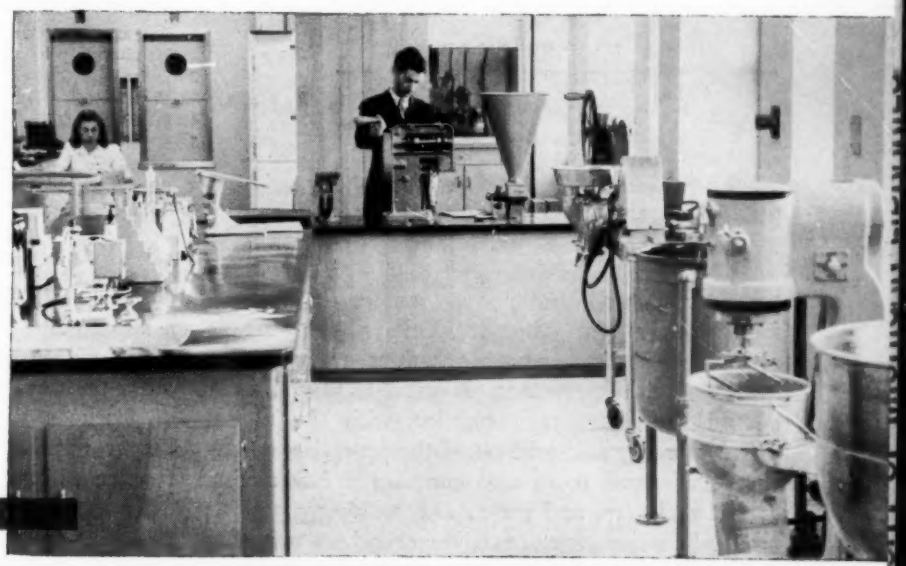
Staff

Pharmacy proper is staffed by three fully qualified registered pharmacists and one registered apprentice. Porter service is always immediately available since we have four on the staff to serve the combined departments. The porters make pick-ups and delivery of drug baskets, are re-

sponsible for cleaning, obtaining supplies from the stock rooms, etc. The department is open seven days a week, from 8:00 A.M. to 6:00 P.M. Mondays through Fridays, 8:00 A.M. to 4:00 P.M. Saturdays, Sundays and holidays. Central Sterile Supply section is open continuously.

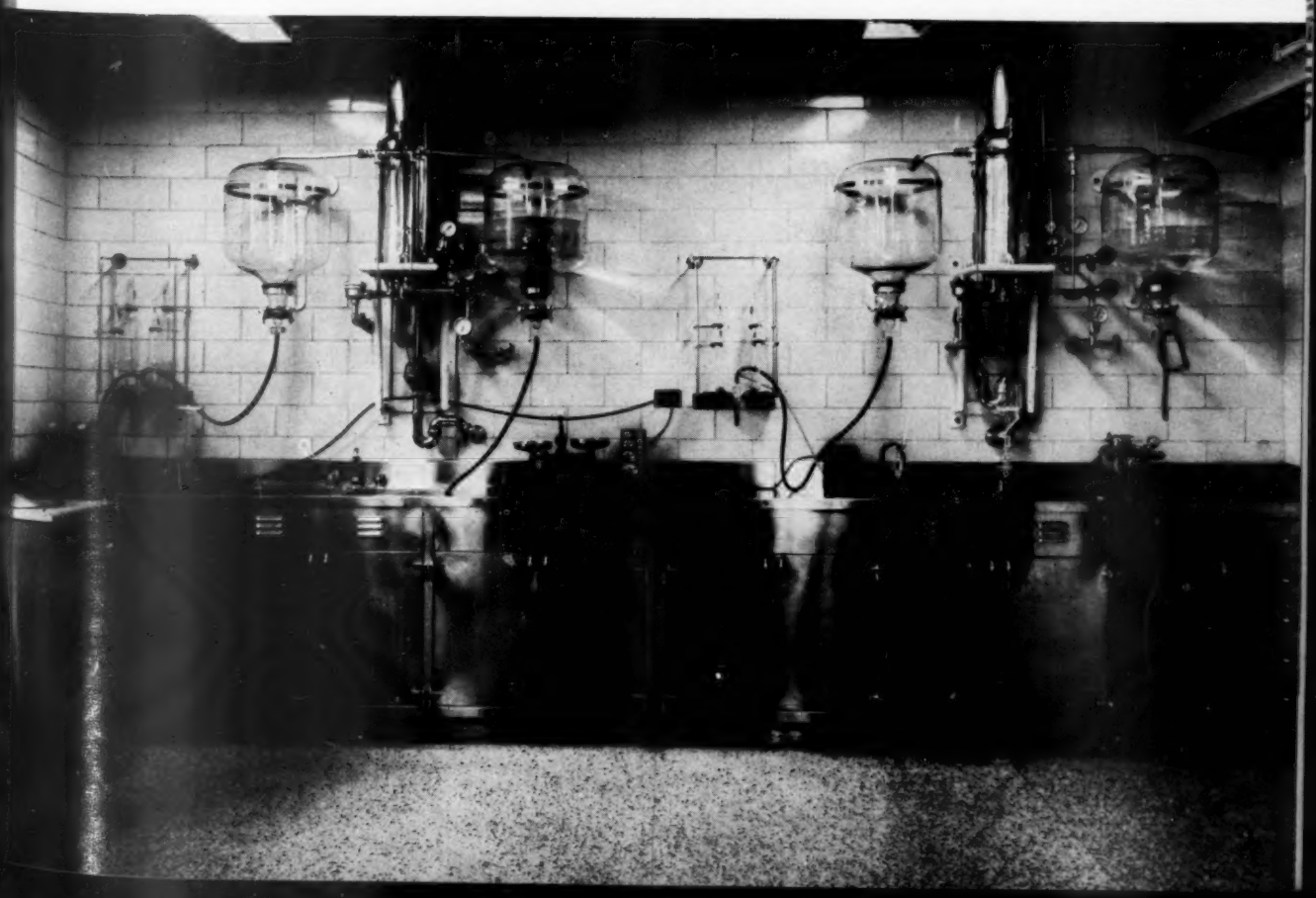
Emergency Requests For Drugs

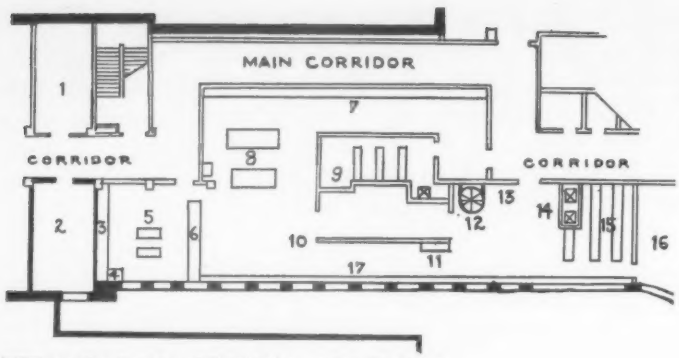
After-duty hours, medications are provided in that a portion of the Pharmacy office which is divided by a permanent partition to create a small room in which is located a section of shelving with sliding glass doors and a small electric refrigerator. The night supervisors have access to this room but cannot enter the Pharmacy itself. A representative stock of medications is kept here and items taken replaced each morning upon checking the requisitions left. A stock of drugs for treatment of poisoning and other emergencies is also maintained here with a list of common poisons, their antidotes and suggested treatment. This arrangement has satisfactorily taken care of needs while the pharmacists are absent. The night supervisors are pleased to have a compact unit in which to locate needed items without having to search a large department and we are



RIGHT: *A view of the pharmaceutical laboratory*

BELOW: *Apparatus for the preparation of parenteral solutions at Kitchener—Waterloo Hospital*

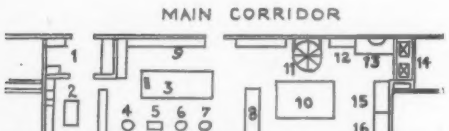




STERILIZATION SECTION, 1ST FLOOR

1. Storage
2. Explosion-proof storage
3. Fenwal units with stills
4. Flask washer
5. Drainage racks
6. Open steel shelves
7. Work benches with sinks— cleaning area
8. Two large work tables
9. Autoclaves, 3 rectangular
10. Glass partition
11. Supervisor's desk with remote controls
12. Spiral stairway
13. Pneumatic tube
14. Two dumb-waiters
15. Open steel shelves
16. Unsterile storage
17. Work benches

X. Hot air sterilizer.



PHARMACEUTICAL LAB., 2ND FLOOR

1. Reception room and supplies for after-duty hours
2. Office
3. Manufacturing counter
4. Steam-jacketed kettle
5. Mixer for suspensions and emulsions
6. Glass-lined tank
7. Colloid mill
8. Table containing tablet machine and tubing equipment
9. Open shelves
10. "Schwartz" type units
11. Spiral stairway
12. Pneumatic tube
13. Dispensing table and wicket
14. Two dumb-waiters
15. Refrigerator
16. Fume cupboard

certainly pleased that no one enters the department during our absence. One pharmacist is always on call to answer questions or return to the hospital if necessary. A card is placed in a slot in this room each evening with the name, phone number and address of the on-call pharmacist. This small room also contains a few chairs, a coat rack, etc. and serves as a waiting room for medical service representatives or others awaiting interview, making it unnecessary for them to wander around the department.

Method Of Charging

Routine ward stock medications are supplied twice a day, seven days a week. The drug baskets are picked up by our porters at 8:00 A.M. and 2:00 P.M. They are delivered at 9:00 A.M. and 2:30 P.M. Special medications may be requisitioned at this time and sent in the drug baskets or may be requisitioned at any time during normal working hours and delivered by pneumatic tube or dumb-waiter. All special medications, i.e. other than ward stock, are charged directly to the patient's account on issue and a credit made for any returns. We keep an account card in alphabetical file for each patient and enter all charges and credits thereon. Upon discharge of the patient the business office sends a request for the card which is sent to them for posting and disposal. Cards are also sent to the business office on closing each day and twice monthly for posting and checking. Upon adopting this system of charging in lieu of the previous method of sending a slip to the office for each charge, the business office transferred one full-time employee to another position. The change decreased their volume of work to the extent that this person was no longer required and it made no significant difference to our volume of clerical work.

Pharmacy Office

The pharmacy office contains the usual office furniture of desk, phone, and files and is unique in possibly one respect: The book case is constructed to serve as a rack for professional journals as well as reference texts. The first three shelves are the regular type to accomodate textbooks while the upper portion is so constructed that several compartments with hinged flaps are available. In the utilization of this unit, the current copy of the journal is placed in a slot on the flap and is visible while the previous copies are placed underneath by lifting the flap.

Inspection Of Drug Cabinets

Medication cabinets, refrigerators, and other storage units on the nursing divisions and departments are checked at monthly intervals for outdated biologicals, soiled labels, deteriorated medicines, etc. One of the pharmacists makes the check and is accompanied by the supervisor of the unit being checked. Permission to carry out these checks is obtained from the director of nurs-

ing. The formality of obtaining permission and requesting the nursing supervisor to be present has helped to create good will for the department.

Equipment

The pharmacy proper is equipped with the usual compounding and dispensing aids as well as a 30-gallon steam-jacketed kettle with portable electric mixer, a heavy-duty kitchen type electric mixer, a 20-gallon glass lined mixing tank with portable electric mixer, a model JT Homoloid which was purchased as a homogenizer some years ago but also with the thought that it could eventually be used as a granulator for tablet masses as well (it is now being used for this purpose), a Stoke's model A3 Eureka single-punch motor-operated tablet compressor with a capacity of about 6000 tablets per hour, a Stoke's tube filling, closing and sealing unit, a small hand homogenizer, a small hand-operated roller mill for ointments, and a fume cupboard.

Tablets and bulk chemicals are stored in working quantities in "Schwartz" type units made by the hospital carpenter.

Dispensing Unit

The dispensing unit is built under and around a wicket opening into the main corridor and from which outpatient dispensing may be carried out. Due to facilities such as the pneumatic tube system, dumb-waiters, intercommunication system, etc. it is seldom necessary for hospital personnel to come to the department for their requirements. The only time it is necessary for nursing personnel to come to the department is to obtain narcotics since they must be obtained in person by a graduate or student nurse and signed for. The dispensing counter contains all ampul medication in addition to dispensing needs, as bottles, boxes and labels. The black formica top supports a telephone, intercommunication set and typewriter. A small desk and chair are situated immediately to the left of the dispensing counter and the pneumatic tube station is adjacent to the desk. The electric dumb-waiters and a large electric refrigerator are to the right of the dispensing counter. A spiral stair leads directly to Central Sterile Supply immediately below.

Manufacturing Area

The manufacturing and work area occupies about one half of the department with the equipment mentioned previously located in this area. The work-table is about 20 feet by 7 feet with a smooth flat surface of black acid and stain resistant formica, with gas and electric outlets, and a large sink in one end. The drawer and cupboard space in this table contain the ward stock medications which number about 100 items and are kept prepackaged. Ward baskets are filled from the surface of this table. Gallon bottles and other large containers are stored on open shelving built flush with the wall near the work-table.

The original plans for the department called for two permanent partitions to divide the three areas from each other; however, after careful consideration these were eliminated in favor of one large room. We have not regretted this change of plans.

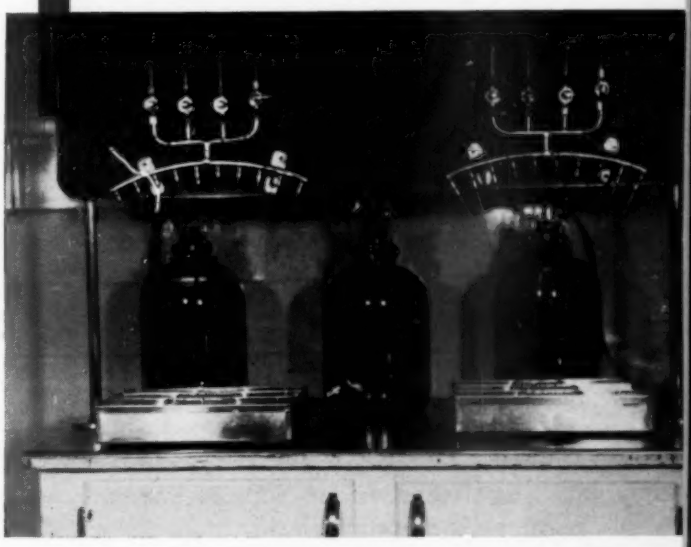
Literature File

A comprehensive file of medical literature is kept in alphabetical sequence in filing cabinets and is consulted many times each day by physicians, interns and nurses. We also maintain a stock card for each item of stock and which gives the name of the drug, the vendor, date of purchase, unit price, amount purchased and price to the patient. We keep perpetual inventory only on narcotics. A perpetual inventory on routine items of stock for a hospital of small size such as ours has not seemed necessary or desirable.

Manufacturing Policy

Manufacturing is carried out on any item which is used in sufficient volume, which may be pre-

Needle Cleaning Machine used in Central Sterile Supply



pared at less cost than to purchase, when it is possible to prepare a product at least equivalent in quality to its commercial counterpart and where patent rights are not infringed upon. Savings through manufacturing pharmaceuticals alone averages about $12,000 per year and includes those resulting from preparation of compressed tablets, surgical lubricants and ointments in collapsible tubes, milk of magnesia, emulsion liquid paraffin, etc. (This does not include savings effected by preparing parenteral solutions.)

Central Sterile Supply

The Central Sterile Supply Department, as mentioned previously, is an integral part of the Pharmacy Department operated under the direction of the chief pharmacist. It is open 24 hours a day, seven days a week and is staffed by 29 persons who perform all the tasks in connection with sterilization of supplies for the entire hospital including operating and delivery rooms. Three rectangular autoclaves, 24" by 36" by 60" are necessary to provide this service since there are no other autoclaves in the hospital; the operating and delivery rooms have high speed instrument washer sterilizers for emergency use only. All tray set-ups are processed, sterilized and stored in Central Sterile Supply and issued upon request. No stocks are kept on the floors or departments as delivery may be made almost immediately upon request by the intercommunications system or phone. Soiled trays are picked up by our porters every two hours during the day and less frequently during the evening shifts and returned to the department for dissembling, washing, assembling, wrapping and sterilizing. They are then stamped "sterile" and placed in sterile storage. A home-made needle-cleaning machine has considerably increased the speed of processing hypodermic needles. One girl can now process in two hours the needles that previously occupied one person full time.

As shown by the schematic diagram of floor plans the layout is such that the flow of work is continuous and such that sterile and unsterile goods cannot become mixed. The autoclaves are operated by remote control panels from a desk immediately outside a glass panel which permits of a full view of the sterilizing bank but prevents radiant heat from making the rest of the section uncomfortable. A hot air oven is also located in the sterilizing bank. Exhaust outlets immediately above the sterilizers removes steam and heat when the autoclave doors are opened. The entire department is air-conditioned.

Parenteral Solutions

Sterile solutions are prepared in a separate section just off Central Sterile Supply in order to utilize the same autoclaves. The Fenwal system is used to prepare about 120,000 flasks of sterile solution annually. The savings from this procedure alone are about $75,000 a year. Of the solutions prepared, about 10,000 flasks a year are intravenous fluids, the remainder being Pourovac containers of various solutions for irrigations, wet dressings, surgical fluids, and distilled water in hermetically closed containers. There are no so-called water sterilizers in the hospital; hence all sterile fluids are prepared and supplied by the Pharmacy Department. One pharmacy helper or "technician" spends full time in this section and is responsible for washing of flasks and equipment, filling, sterilizing, washing flasks after sterilizing, labelling and placing in storage. She calls a pharmacist to do all weighing and measuring and to check water purity, *p*H, visual checks, etc. Pyrogen tests U.S.P. are performed by one of the pharmacists when required and samples are sent to the clinical laboratory for cultures. Work sheets are issued to this girl each morning and are returned to the chief pharmacist each evening bearing the complete data regarding each product made and with the initials of one of the pharmacists following each step. Several small volume injectibles in multiple dose vials are prepared using the method as outlined by Mr. Herbert Flack in the "Parentsol System" and using a fermpress hand crimper to apply the aluminum seal closures.

Rubber gloves are washed and dried by our laundry department in their regular machines thus saving time and equipment. Upon receipt by us in soiled condition, they are placed in bags and forwarded to the laundry, to be returned to us the same day washed dried and ready to be tested, powdered and wrapped for sterilization. Biosorb powder is used in lieu of talc for powdering.

Store Rooms

With the exception of two storerooms the foregoing account describes the Pharmacy—Central Sterile Supply Department of the Kitchener-Waterloo Hospital. One of the storerooms is built to specifications of provincial and federal authorities as a fire-proof room for storage of explosive and inflammable materials and is used for storing drums of alcohol, glycerin, ether etc. and anaesthetic gases, the other storeroom is used for dressings and related supplies required for the sterilization program.

First Supplement to

Comprehensive BIBLIOGRAPHY on Hospital Pharmacy

including publications to January 1953

compiled by

William Heller and Gloria Niemeyer

THE BULLETIN American Society of Hospital Pharmacists
VOL 10 NO 1 *January-February 1953*

Preface to First Supplement

This Supplement to the *Comprehensive Bibliography on Hospital Pharmacy,* covers the two succeeding years, 1951 and 1952. Because of the usefulness of the Bibliography to practicing hospital pharmacists, the following resolution was passed at the Decennial Meeting of the American Society of Hospital Pharmacists:

> *Whereas the extensive Bibliography* published in THE BULLETIN, volume 8, number 1, has been of inestimable value to the practicing hospital pharmacist, therefore
>
> *Be it resolved* that the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS provide for the issuance of an annual supplement to the *Comprehensive Bibliography on Hospital Pharmacy.*

In this First Supplement, several additional journals which were omitted in the 1951 Bibliography have been covered. In such cases, references to articles appearing prior to 1951 may be included. Among these is the *American Journal of Pharmaceutical Education.* Other publications covered at least to a greater extent in the Supplement include *Pharmacy International, Drug Topics, Drug Trade News, American Druggist* and *The Pharmaceutical Journal* (London).

In general, the same plan is followed in the Supplement as in the 1951 Bibliography. In a few instances, new subject headings have been added in order that material may be more readily located under the Principal Subject Headings. It should be noted that articles may be listed under more than one subject. An author index is also included.

Apparent from this addition to the reference material for hospital pharmacists, is the increasing volume of literature being published in this specialty. Again, no attempt has been made to select or evaluate articles included in the literature. With the exception of routine news and notes on local organizations, all references of interest to hospital pharmacists have been included in this Supplement.

Mr. William Heller, a graduate student at the University of Maryland School of Pharmacy, Baltimore, and formerly an intern in hospital pharmacy at The Johns Hopkins Hospital, has carried out the basic work in compiling this Supplement to the Bibliography. His interest and enthusiasm for carrying out the project contributed much toward making it possible for publication at this early date.

Washington, D. C.
January, 1953

Gloria Niemeyer

Preface to 1951 Bibliography

The following bibliography is an attempt to bring together in convenient form references to the literature in hospital pharmacy. We have endeavored to take into account the special needs of hospital pharmacists and teachers as well as all those concerned with hospital pharmacy practice. It should be noted that this covers only hospital pharmacy; articles on pharmacology and therapeutics have not been included unless of particular interest to hospital pharmacists.

Principal subject headings have been chosen and arranged in a manner most convenient for use. No attempt has been made to include an index, but headings have been chosen to cover broad subjects. Occasional duplications have been made in order that one using a list of references on a particular subject will have the advantage of finding each subject and each entry self-contained without referring elsewhere. Subject headings are arranged alphabetically with references arranged chronologically, the most recent articles appearing first under each heading. Articles appearing within each year are separated by a line. The names in the author index, arranged alphabetically without distinction as to sole or joint authorship, are followed by numbers which refer to the reference number of each article written by a particular author. Page numbers are not referred to in the author index.

In most cases the outstanding pharmaceutical and hospital publications have been covered for the past two decades. It was felt generally that articles published prior to this date would have limited use. Consequently, only those articles appearing prior to 1930 which might have unusual interest or historical value have been included. In most cases foreign articles have not been included since these are readily accessible. No attempt has been made to evaluate the articles included in the bibliography.

For the benefit of those not having complete library facilities, the Army Medical Library makes available single photoprint copies of separate articles from periodicals at a charge of fifty cents for each five consecutive pages or fraction thereof from any one article. The library will also lend without charge, single microfilm copies of original articles published in medical periodicals not available locally. Such loan requests should be routed through libraries, Governmental Agencies, or Research Institutions. The Microfilm, being a part of the duplicate collection of the library, may be used for ninety days and should be returned to the library at the end of the loan period. Single microfilm copies will also be sold at a rate of fifty cents for each fifty pages or fraction thereof from a single article to those desiring to retain them. Requests must be made on Form AML-48 available from the Army Medical Library, 7th and Independence Ave., S. W., Washington 25, D. C.

It is hardly possible to make such a work complete; however, every effort has been made to prepare a bibliography which will serve as a guide to the existing literature in the field. Undoubtedly, much has been included which might have been omitted. Notification of details of errors and omissions will be appreciated. To keep an up-to-date bibliography on hospital pharmacy, it is hoped that an annual supplement may be published in a convenient form.

Washington, D. C.
December, 1950

Gloria Niemeyer

Principal Journals Cited in Bibliography with ABBREVIATIONS

American Journal of Pharmaceutical Education—
Am. J. Pharm. Ed.

American Journal of Pharmacy—
Am. J. Pharm.

American Professional Pharmacist—
Am. Profess. Pharmacist

The Bulletin of the American Society of Hospital Pharmacists—
Bull. Am. Soc. Hosp. Pharm.

Bulletin of the National Association of Boards of Pharmacy—
N.A.B.P. Bull.

Hospital Management—
Hosp. Management

The Hospital Pharmacist (Canada)
Hosp. Pharm.

Hospital Progress—
Hosp. Progress

Hospitals—
Hospitals

The Journal of the American Medical Association—
J. Am. Med. Assoc.

Journal of the American Pharmaceutical Association—
J. Am. Pharm. Assoc.

Journal of the American Pharmaceutical Association,
Practical Pharmacy Edition—
J. Am. Pharm. Assoc., Pract. Pharm. Ed.

The Modern Hospital—
Modern Hosp.

The Pharmaceutical Journal (London)
Pharm. J.

Southern Hospitals—
South. Hosp.

NOTE: Arrangement of individual references is according to the following style:

Author: Title of Article, Name of Periodical (in italics), volume number: page number (month) year.

Numbers of the periodicals have not been included since the month is always listed. Journals which are referred to most frequently are listed above, along with the abbreviations as used throughout the bibliography.

Subject Headings

First Supplement to Bibliography on Hospital Pharmacy

First Supplement to
COMPREHENSIVE
BIBLIOGRAPHY
on Hospital Pharmacy

ADMINISTRATION
GENERAL ORGANIZATION & ADMINISTRATION

1 Zugich, J. J.: Management Guides: Pharmacy, *Hospitals* 26:55 (June, Pt. 2) 1952.

2 Archambault, G. F.: The Business Side of Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 9:102 (Mar.-Apr.) 1952.

3 Mang, H. J.: Administrative Qualities, *South. Hosp.* 20:54 (Jan.) 1952.

4 Milne, A. M.: The Pharmacist Is Worthy of His Hire, *Modern Hosp.* 77:96 (Dec.) 1951.

5 Goldapple, J.: Letter to the Editor (Polyprofessional Pharmacist), *Hosp. Pharm.* (Canada) 4:297 (Nov.-Dec.) 1951.

6 Buck, F. D.: Thirty Days in a Hospital Pharmacy, *Hosp. Pharm.* (Canada) 4:247 (Sept.-Oct.) 1951.

7 Frazier, W. M.: Hospital Pharmacy Management, *Bull. Am. Soc. Hosp. Pharm.* 8:298 (Sept.-Oct.) 1951.

8 McClusky, D. O. and Howell, J. L.: Pricing Policies: Two Views, *Bull. Am. Soc. Hosp. Pharm.* 8:370 (Sept.-Oct.) 1951.

9 Tolson, E. L.: The New Hospital—Methods and Outlines for a Symposium on Hospital Operation, *Modern Hosp.* 77:69 (Aug.) 1951.

10 Anon.: Departmental Organization of the Hospital: —Pharmacy, *Hospitals* 25:29 (Aug.) 1951.

11 Anon: Self-Analysis Quiz for Chief Pharmacists, *Am. Profess. Pharmacist* 17:732 (Aug.) 1951.

12 Sister M. Etheldreda: What Minimum Standards Mean to the Hospital Pharmacy, *Hospitals* 25:64 (July) 1951.

13 Sister Mary Junilla: The Pharmacist as An Ally of the Medical Service, *Hosp. Management* 71:81 (June) 1951.

14 Anon.: Management Guides: Pharmacy, *Hospitals* 25:57 (June, Pt. 2) 1951.

15 Thiel, A. D.: A Pharmacist Blueprints a Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:178 (May-June) 1951.

16 Statia, P.: Let the Pharmacist Do It, *Am. Profess. Pharmacist* 17:448 (May) 1951.

17 Silversides, F. H.: Weaknesses in Hospital Pharmacies, *Hosp. Pharm.* (Canada) 4:81 (Mar.-Apr.) 1951.

18 Anon: The Hospital Pharmacy—A Professional Service, *Hosp. Pharm.* (Canada) 4:99 (Mar.-Apr.) 1951.

19 Rivin, A. A.: What the Hospital Can Do About Disaster Planning, *Hospitals* 25:33 (Feb.) 1951.

20 Flack, H. L.: The Hospital Pharmacist Views Administration, *Pharm. International* 5:12 (Feb.) 1951.

21 Asquith, M. E.: The Services of a Hospital Pharmacist, *Hosp. Pharm.* (Canada) 4:40 (Jan.-Feb.) 1951.

COST OF MEDICATIONS
Pricing, Drug Charges, etc.

22 Martin, S. W.: Hospital Accounting and Considerations of Pharmacy Operations, *Hosp. Pharm.* (Canada) 5:273 (Sept.-Oct.) 1952.

23 Clem, H.: Drug Pricing, *South. Hosp.* 20:54 (Aug.) 1952.

24 Vance, J.: Charges Survey of Member Hospitals of Texas Hospital Association, *South. Hosp.* 20:52 (Aug.) 1952.

25 Martin, J. D.: Small Charge for Bottles, *Modern Hosp.* 78:100 (May) 1952.

26 Vance, J.: The Hospital Drug Bill Is a National Spectacle, *South. Hosp.* 20:72 (May) 1952.

27 Vance, J.: The Profit Motive in the Hospital Pharmacy, *South. Hosp.* 20:52 (Jan.) 1952.

28 Vance, J.: Survey on Drug Charges, *South. Hosp.* 19:61 (Dec.) 1951.

29 Smith, G.: Pharmacy Charges in Hospitals, *Hosp. Pharm.* (Canada) 4:137 (May-June) 1951.

30 Brown, R. E., *et al.*: On Payment for Care of the Indigent (Opinions Dept.), *Hospitals* 25:24 (Feb.) 1951.

DISPENSING, LABELING AND STORAGE

31 Carr, B. F.: A New System of "No Credits—No Returns" for Late Pharmacy Charges, *Am. Profess. Pharmacist* 18:802 (Sept.) 1952.

32 Anon.: Coloring Non-Injectable Fluids, *Hosp. Pharm.* (Canada) 5:204 (July-Aug.) 1952.

33 Sister Joseph Marie: The Proper Labelling of Medicine, *Hosp. Pharm.* (Canada) 5:156 (May-June) 1952.

34 Anon.: More About Operating Room Hazards, *Hosp. Pharm.* (Canada) 5:139 (May-June) 1952.

35 Report by the Codex Revision Committee: Colouring Non-Injectable Fluids for Use in Hospital Operating Theatres, *Pharm. J.* (London) 168:283 (Apr. 26) 1952.

36 Anon.: Operating Room Hazards: (Injectables), *Hosp. Pharm.* (Canada) 5:84 (Mar.-Apr.) 1952.

37 Cope, R. W., *et al.*: Ampoule Labels (Letter to the Editor), *Pharm. J.* (London) 168:222 (Mar. 29) 1952.

38 Anon.: Ampoule Labels (Letter to the Editor), *Pharm. J.* (London) 168:179 (Mar. 15) 1952.

39 Shepley, G. F.: Ampoule Labels (Letter to the Editor), *Pharm. J.* (London) 168:162 (Mar. 8) 1952.

40 ANON.: Read the Label (Editorial), *Pharm. J.* (London) 168:135 (Mar. 1) 1952.

41 ANON.: Injection Routine in Operating Theatre—Ministry of Health Inquiry, *Pharm. J.* (London) 168:141 (Mar. 1) 1952.

42 JONES, E. W.: Hospital Pharmacists Needed (Small Hospital Questionnaire), *Modern Hosp.* 78:47 (Mar.) 1952.

43 COLLINS, W. R.: Control of Floor Drugs, *Am. Profess. Pharmacist* 18:150 (Feb.) 1952.

44 SMITH, J. E.: The Prescription Problem: One Approach, *Hosp. Pharm.* (Canada) 4:305 (Nov.-Dec.) 1951.

45 SISTER M. ANCILLA: Report on Hospital Solutions' Questionnaire, *Hosp. Pharm.* (Canada) 4:143 (May-June) 1951.

46 SMITH, G.: Report of the Labelling Committee, *Hosp. Pharm.* (Canada) 4:32 (Jan.-Feb.) 1951.

47 ZOPF, L. C.: Outline for Hospital Dispensing, *Am. J. Pharm. Ed.* 14:111 (Jan.) 1950.

PERSONNEL AND SALARIES

48 ANON.: Union Seeks to Stop Untrained Personnel from Dispensing Drugs in NYC Hospitals, *Am. Druggist* 126:96 (Oct. 27) 1952.

49 ANON.: Job Descriptions in Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 9:183 (May-June) 1952.

50 FLACK, H. L.: How Can the Hospital Get a Good Pharmacist? *Hosp. Management* 73:108 (Mar.) 1952.

51 COOK, W. F.: A Ten-Year Increase in Hospital Personnel, *Hospitals* 25:53 (Oct.) 1951.

52 VANCE, J.: Salary Poll, *South. Hosp.* 19:51 (June) 1951.

53 CORRESPONDENCE: Hospital Pharmacy (for the Recent Graduate), *Am. Profess. Pharmacist* 17: 523 (June) 1951.

POLICY

54 ANON.: Union Seeks to Stop Untrained Personnel from Dispensing Drugs in NYC Hospitals, *Am. Druggist* 126:96 (Oct. 27) 1952.

55 ANON.: Hospital Prescription Service, (Resolution on, by A.Ph.A. 1952 Convention), *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:636 (Sept.) 1952.

56 VANCE, J.: Enlarging the Scope of the Hospital Pharmacy, *South. Hosp.* 20:55 (July) 1952.

57 SCOTT, E. G.: Policy in the Hospital Pharmacy, *Hosp. Pharm.* (Canada) 5:150 (May-June) 1952.

58 WALLACE, K.: Research in Purchasing, *South. Hosp.* 19:69 (Dec.) 1951.

59 JOHNSON, M.: Pharmacy Cost Control, *South. Hosp.* 19:49 (Aug.) 1951.

60 ANON.: North California Men Urge Hospitals Not to Encroach on Drug Store Service, *Drug Topics* 95:3 (Mar. 12) 1951.

61 HEARD, J. S.: Pharmacy Outpatient Service, *Am. Profess. Pharmacist* 17:60 (Jan.) 1951.

PURCHASING

62 MARTIN, S. W.: Hospital Accounting and Considerations of Pharmacy Operations, *Hosp. Pharm.* (Canada) 5:273 (Sept.-Oct.) 1952.

63 YALON, J. M.: Purchasing in the Hospital Pharmacy, *Am. Profess. Pharmacist* 18.624 (July) 1952.

64 ANON.: Simplified Drug Catalogs, *Hospitals* 26:90 (July) 1952.

65 ANON.: The Pharmacist as a Purchasing Agent, *Hosp. Pharm.* (Canada) 5:106 (Mar.-Apr.) 1952.

66 VANDERWARKER, R., *et al.*: A Formulary Would Help in Purchasing Drugs, *Modern Hosp.* 77:81 (July) 1951.

RECORDS AND REPORTS

67 VANCE, J.: Essential Business Records for the Pharmacy. *Hosp. Management* 72:78 (Dec.) 1951.

68 KIRKLAND, J.: Essential Business Records, *South. Hosp.* 19:68 (Oct.) 1951.

69 ANON.: Monthly Pharmacy Reports of Merit, *Am. Profess. Pharmacist* 17:256 (Mar.) 1951.

70 MUNCIE, F. T.: Accounting Methods for Hospital Pharmacy, *Hosp. Pharm.* (Canada) 4:44 (Jan.-Feb.) 1951.

STOCK CONTROL

71 BRYAN, H. M.: Ways and Means to Ease the Labor Shortage, *Hospitals* 26:60 (Nov.) 1952.

72 HANSEN, H. S.: Effective Control of Pharmacy Inventory, *Modern Hosp.* 79:102 (Aug.) 1952.

73 ANON.: Hospital Pharmacists Discuss Barbiturate Control, *Texas Druggist* 71:16 (July) 1952.

74 USTAS, M. J.: Control is the Answer to Economy in the Central Supply Room, *Hospitals* 26:67 (June, Pt. 1) 1952.

75 TRILLWOOD, W.: Administration of Drugs, *Hosp. Pharm.* (Canada) 5:87 (Mar.-Apr.) 1952.

76 COLLINS, W. R.: Control of Floor Drugs, *Am. Profess. Pharmacist* 18:150 (Feb.) 1952.

77 BEVIS, L. R.: Emergency Floor Stock and Routine Medicines, *South. Hosp.* 19:70 (Sept.) 1951.

78 BACTOWSKY, E. G. and FLACK, H. L.: Evaluation of Factors Determining Free Floor Stock in the Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:229 (July-Aug.) 1951.

79 COOK, J.: Pharmacy Controls, *Hosp. Pharm.* (Canada) 4:197 (July-Aug.) 1951.

80 CLARK, E. L. T.: A Note on Time Saving, *Am. Profess. Pharmacist* 17:262 (Mar.) 1951. Reprinted from *The Public Pharmacist* (Great Britain) (June) 1950.

AMERICAN HOSPITAL ASSOCIATION

See Also Institutes

81 ANON.: American Hospital Association (Editorial Comment), *Am. Profess. Pharmacist* 18:875 (Oct.) 1952.

82 ANON.: A.H.A. Convention, *Bull. Am. Soc. Hosp. Pharm.* 9:548 (Sept.- Oct.) 1952.

83 PRUITT, H. V.: The Institute Story, *Hospitals* 26: 63 (Sept.) 1952.

84 CADMUS, R. R.: The Role of the American Hospital Association in the Advancement of Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 9:249 (July- ug.) 1952.

AMERICAN PHARMACEUTICAL ASSOCIATION & AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

Includes Division of Hospital Pharmacy and references to affiliated chapters of the ASHP.

85 Sister M. Theodora: It's Your Organization and Mine, *Bull. Am. Soc. Hosp. Pharm.* 9:595 (Nov.-Dec.) 1952.

86 Anon.: Association (A.H.A.) Takes Part in Centennial (of A.Ph.A.), *Hospitals* 26:148 (Oct.) 1952.

87 Anon.: Hospital Pharmacists Elect New Officers, *Hosp. Progress* 33:6 (Oct.) 1952.

88 Rogan, J. L.: Effective Standards Called Key to Good Pharmacy Service, *Hosp. Management* 74:100 (Oct.) 1952.

89 Olynyk, I. O.: Report on the Centennial Meeting of the American Pharmaceutical Association, *Hosp. Pharm.* (Canada) 5:255 (Sept.-Oct.) 1952.

90 American Society of Hospital Pharmacists: Official Reports, ASHP, 1952 (Includes Reports, Constitution and By-Laws, Affiliated Chapters and Officers, Officers and Committees for 1952-1953 and Membership List by States), *Bull. Am. Soc. Hosp. Pharm.* 9:475 (Sept.-Oct.) 1952.

91 Anon.: 1952 Meeting: The Decennial, *Bull. Am. Soc. Hosp. Pharm.* 9:467 (Sept.-Oct.) 1952.

92 Anon.: Canadian Delegate Brings Greetings to Anniversary Meeting at Philadelphia, *Hosp. Pharm.* (Canada) 5:259 (Sept.-Oct.) 1952.

93 Anon.: Nominated to A.Ph.A. Council, *Bull. Am. Soc. Hosp. Pharm.* 9:547 (Sept.-Oct.) 1952.

94 Francke, D. E.: ASHP Decennial Meeting (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:459 (Sept.-Oct.) 1952.

95 Anon.: ASHP Growth (Editorial) *Drug Trade News* 27:42 (Sept. 15) 1952.

96 Anon.: ASHP (Convention), *Am. Druggist* 126:14 (Sept. 1) 1952.

97 Anon.: (Meeting of) American Society of Hospital Pharmacists, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:646 (Sept.) 1952.

98 Anon.: Annual Meeting Hospital Pharmacists, *Hosp. Progress* 33:10 (Aug.) 1952.

99 Niemeyer, G.; Berman, A.; and Francke, D. E.: Ten Years of the American Society of Hospital Pharmacists, *Bull. Am. Soc. Hosp. Pharm.* 9:277 (July-Aug.) 1952.

100 Fischelis, R. P.: A.Ph.A. Centennial (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:241 (July-Aug.) 1952.

101 Francke, D. E.: A Salute to the A.Ph.A. (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:245 (July-Aug.) 1952.

102 Frazier, W. M.: Tenth Anniversary of ASHP (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:243 (July-Aug.) 1952.

103 Anon.: Program: 1952 ASHP Convention, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:485 (July) 1952.

104 Anon.: Former Dean Receives Hospital Pharmacy Award, *Am. Profess. Pharmacist* 18:540 (June) 1952.

105 Francke, D. E.: ASHP Decennial Year (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:167 (May-June) 1952.

106 Anon.: American Society of Hospital Pharmacists Celebrate Their 10th Anniversary, *Hosp Pharm.* (Canada) 5:162 (May-June) 1952.

107 Anon.: A.Ph.A. Centennial—ASHP Decennial, *Bull. Am. Soc. Hosp. Pharm.* 9:202 (May-June) 1952.

108 Anon.: Edward Spease Wins Whitney Annual Award, *Drug Topics* 96:32 (Apr.) 1952.

109 Anon.: Michigan Hospital Pharmacists Honor Edward Spease, *Hosp. Management* 73:86 (Apr.) 1952.

110 Anon.: Edward Spease Named Recipient of H.A.K. Whitney Award, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:292 (Apr.) 1952.

111 Anon.: Hospital Pharmacists Elect Bowles President, *Drug Topics* 96:24 (Mar. 10) 1952.

112 Anon.: Hospital Pharmacists Told Profession Has Helped Boost Life Span of Man, *Drug Topics* 96:44 (Mar. 10) 1952.

113 Anon.: ASHP Election Results, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:222 (Mar.) 1952.

114 Vance, J.: A Lack of Pharmaceutical Statesmen, *South. Hosp.* 20:68 (Mar.) 1952.

115 Anon.: Our Cover (Dean Edward Spease), *Am. J. Pharm.* 124:40 (Feb.) 1952.

116 Scott, E. G.: ASHP Projects, *Bull. Am. Soc. Hosp. Pharm.* 9:59 (Jan.-Feb.) 1952.

117 Anon.: Policy Committee Meets, *Bull. Am. Soc. Hosp. Pharm.* 9:65 (Jan.-Feb.) 1952.

118 Anon.: Hospitals' Retail Pharmacies Opposed, *Hospitals* 26:138 (Jan.) 1952.

119 Rogan, J. L.: Hospital Pharmacists Hear Panel Discuss Drugs in the Hospital Budget, *Hosp. Management* 72:102 (Oct.) 1951.

120 Anon.: Convention Resolution No. 9: Physician-Owned Pharmacies; and Convention Resolution No. 10: Retail Pharmacies in Hospitals, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:614 (Oct.) 1951.

121 American Society of Hospital Pharmacists: Official Reports, ASHP, 1951 (Includes Reports, Constitution and By-Laws, Affiliated Chapters and Officers, Officers and Committees for 1951-1952 and Membership Lists by States), *Bull. Am. Soc. Hosp. Pharm.* 8:311 (Sept.-Oct.) 1951.

122 Francke, D. E.: The Building of a Professional Society, *Bull. Am. Soc. Hosp. Pharm.* 8:291 (Sept.-Oct.) 1951.

123 Anon.: The 1951 ASHP Annual Meeting, *Bull. Am. Soc. Hosp. Pharm.* 8:306 (Sept.-Oct.) 1951.

124 Anon.: Hospitals Spend 10% of Budget for Drugs, *Drug Topics* 95:3 (Sept. 10) 1951.

125 Anon.: Hospital Pharmacists Meet in Buffalo, *Hosp. Progress* 32:290 (Sept.) 1951.

126 Anon.: Panel on Minimum Standards to Highlight ASHP Convention, *Drug Topics* 95:38 (July 16) 1951.

127 Anon.: ASHP (Convention Announcement), *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:412 (July) 1951.

128 Francke, D. E.: Your Part in the Membership Drive (Editorial) *Bull. Am. Soc. Hosp. Pharm.* 8:157 (May-June) 1951.

129 Bowles, G. C.: Membership, *Bull. Am. Soc. Hosp. Pharm.* 8:197 (May-June) 1951.

130 Anon.: 1951 Annual Meeting—August 26, *Bull. Am. Soc. Hosp. Pharm.* 8:185 (May-June) 1951.

131 Anon.: Hansen Receives Whitney Award, *Drug Topics* 95:31 (May 7) 1951.

132 ANON.: Hans S. Hansen Receives Hospital Pharmacy Award, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:314 (May) 1951.

133 ANON.: Hansen Receives H.A.K. Whitney Award, *Bull. Am. Soc. Hosp. Pharm.* 8:136 (Mar.-Apr.) 1951.

134 ANON.: Hospital Prescription Men Form Association, *Drug Topics* 95:44 (Mar. 12) 1951.

135 VANCE, J.: Why Join the A.Ph.A., *South. Hosp.* 19:54 (Jan.) 1951.

CATHOLIC HOSPITAL ASSOCIATION

See also Institutes

136 KNEIFL, M. R.: Advancement of Pharmacy Serv- in Catholic Hospitals, *Bull. Am. Soc. Hosp. Pharm.* 9:251 (July-Aug.) 1952.

CLINIC PHARMACIES

137 ANON.: Supermarket Drug Depts., Clinic Pharmacies Are Seen as Serious Threats to Drug Stores. *Drug Topics* 96:4 (Nov. 3) 1952.

138 ANON.: Plan for Prepaid Medical Care Via Private Clinics is Unveiled, *Am. Druggist* 126:11 (Nov.) 1952.

139 ANON.: Resolution Condemning Clinic Pharmacies, *N.A.B.P. Bull.* 9:4 (July-Aug.-Sept.) 1952.

140 ANON.: Clinic Pharmacy Drops Suit Against Board in Montana, *Drug Topics* 96:2 (Feb. 11) 1952.

141 FRANCKE, D. E.: Clinic Pharmacies and the Profession (Editorial) *Bull. Am. Soc. Hosp. Pharm.* 8:411 (Nov.-Dec.) 1951.

142 ANON.: Convention Resolution No. 9: Physician-Owned Pharmacies; and Convention Resolution No. 10: Retail Pharmacies in Hospitals, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:614 (Oct.) 1951.

143 ANON.: Pharmacy Section is Termed Nonessential for Small Hospitals, *Drug Topics* 95:3 (Sept. 10) 1951.

144 ANON.: Hospital Pharmacy Stresses 'No Profits' to Attract Additonal Prescription Customers, *Drug Topics* 95:2 (Aug. 13) 1951.

145 ANON.: Coast Men Object to Clinic Practice of Marking Prescriptions, *Drug Topics* 95:60 (Aug. 13) 1951.

146 SWAIN, R. L.: Frank Moudry States the Problem (Editorial) *Drug Topics* 95:21 (July 30) 1951.

147 JEFFRIES, S. B.: Pharmacies Can Supplement Income by Serving Hospitals and Clinics, *Pharm. International* 5:38 (July) 1951.

148 TICE, L. F.: Unfair Hospital Competition (Editorial), *Am. J. Pharm.* 123:216 (July) 1951.

149 ANON.: San Francisco Hospital Launches Pharmacy in Competition with City's Retail Druggists, *Drug Topics* 95:4 (June 18) 1951.

150 ANON.: M.D. Pharmacy Is Held Legal in Colo., *Drug Topics* 95:4 (June 18) 1951.

151 ANON.: North California Men Urge Hospitals Not to Encroach on Drug Store Service, *Drug Topics* 95:3 (Mar. 12) 1951.

152 ANON.: Michigan Group Assails Clinic Pharmacies, *Drug Topics* 95:2 (Feb. 26) 1951.

153 ANON.: Effects on Hospitals of the Revenue Act of 1950, *Hospitals* 25:66 (Jan.) 1951.

154 ANON.: Permit for Clinic Pharmacy Denied in Conn., *N.A.B.P. Bull.* 8:6 (Sept.-Oct.) 1949.

DEPARTMENTS, DESCRIPTION OF

Includes hospital pharmacies in specialized institutions, that is, mental, tuberculosis, children's, etc.

155 ANON.: $MgSO_4$ Helps Cure Sing Sing Goldbricks, *Am. Druggist* 126:55 (Dec. 8) 1952.

156 ANON.: Baylor University Hospital, *Tile and Till* 38:114 (Nov.-Dec.) 1952.

157 MORGAN, M. E.: A Modern Pharmacy for a Small Hospital, *Pharm. International* 6:16 (Oct.) 1952.

158 ANON.: Hospital Pharmacy: It is a Unique Branch of a Great Profession, *The Johns Hopkins Magazine* 4:12 (Oct.) 1952.

159 THIEL, A. D.: Jackson Memorial Hospital Pharmacy, *Tile and Till* 38:86 (Sept.-Oct.) 1952.

160 VAUGHN, A.: Health Center Affords U. T. Pharmacy Majors Experience, *Texas Druggist* 71:2 (Sept.) 1952.

161 ANON.: Manchester Royal Infirmary—The Apothecary's Duties, *Pharm. J.* 169:97 (Aug. 9) 1952.

162 ANON.: Pharmacy Department (New York Hospital), *Hosp. Management* 73:48 (July) 1952.

163 ANON.: Vancouver General Hospital Remodeled Pharmacy, *Hosp. Pharm.* (Canada) 5:131 (May-June) 1952.

164 MORGAN, M. E.: A Modern Pharmacy for a Small Hospital, *Bull. Am. Soc. Hosp. Pharm.* 9:188 (May-June) 1952.

165 BECK, A. V. R.: Notes and Suggestions (Description of Pharmacy at Indiana University Medical Center). *Bull. Am. Soc. Hosp. Pharm.* 9:132 (Mar.-Apr.) 1952.

166 MCNAMARA, J. W.: Pharmacy Service (at) Walter Reed Army Hospital, *Bull. Am. Soc. Hosp. Pharm.* 9:118 (Mar.-Apr.) 1952.

167 SPILSBURY, L. G.: Cornwall General Hospital and Its Pharmacy, *Hosp. Pharm.* (Canada) 5:88 (Mar.-Apr.) 1952.

168 TRAUTMAN, J. A.; MASUR, J.; and ARCHAMBAULT, G. F.: Clinical Center—National Institutes of Health, *Bull. Am. Soc. Hosp. Pharm.* 9:38 (Jan.-Feb.) 1952.

169 BENNETT, H.: University of Alberta, Hospital Pharmacy, *Hosp. Pharm.* (Canada) 5:23 (Jan.-Feb.) 1952.

170 ERDELJON, C. U.: Pharmacy Organization in a Veterans Administration Center, *Am. Profess. Pharmacist* 18:54 (Jan.) 1952.

171 STEELE, F. J.: This Hospital Pharmacy Has a Future! *Pharm. International* 5:34 (Dec.) 1951.

172 MCCRADY, E. B.: An Unusual Hospital and Clinic Pharmacy, *Am. Profess. Pharmacist* 17:1110 (Dec.) 1951.

173 ROSENBERG, A. A.: The Hospital Pharmacy of Beth Israel, *Bull. Am. Soc. Hosp. Pharm.* 8:417 (Nov.-Dec.) 1951.

174 O'BRIEN, W. P.: The Pharmacy Department of Touro Infirmary, New Orleans, La., *Bull. Am. Soc. Hosp. Pharm.* 8:366 (Sept.-Oct.) 1951.

175 GRUBER, D. L.: One of the World's Busiest Pharmacies, *Pharm. International* 5:22 (Sept.) 1951.

176 FOWLER, J. E., and ST. JACQUES, O. A.: The New Look in Navy Pharmacy, *Am. Profess. Pharmacist* 17:824 (Sept.) 1951.

177 SMEDMOR, E. J.: The Peterborough Civic Hospital and Its Pharmacy, *Hosp. Pharm.* (Canada) 4:194 (July-Aug.) 1951.

178 STEELE, F. J.: The New Pharmacy Department at Greenwich, *Bull. Am. Soc. Hosp. Pharm.* 8:249 (July-Aug.) 1951.

179 HATTER, F. M.: The Pharmacy of the University of Chicago Clinics, *Hosp. Management* 72:94 (July) 1951.

180 LOUSTALET, E. M.: The Hospital Pharmacy In Action, *Hosp. Management* 71:80 (June) 1951.

181 STEELE, F. J.: The New Pharmacy Department (Greenwich Hospital Association, Conn.), *Hosp. Pharm.* (Canada) 4:145 (May-June) 1951.

182 HITZELBERGER, W. F., and SLANKER, R. C.: The Pharmacy, Los Angeles County General Hospital, *Bull. Am. Soc. Hosp, Pharm.* 8:97 (Mar.-Apr.) 1951.

183 PERRIN, H. G.: Improved Technical Control Gained from Remodeling, *Hospitals* 25:63 (Mar.) 1951.

184 STEIGER, K.: Canton Pharmacy in Zurich, Switzerland, Shows Great Progress Being Made in Hospital Pharmacy, *Pharm. International* 5:18 (Feb.) 1951.

185 WOLFE, E.: VA Hospital Pharmacy Department, Bedford, Mass., *Bull. Am. Soc. Hosp. Pharm.* 8:72 (Jan.-Feb.) 1951.

DETAIL MEN

186 ANON.: What Price Medical Science, *Hosp. Progress* 32:240 (Nov.) 1951.

EDUCATION AND TRAINING

See also Internships and Institutes

187 ANON.: New Jersey Hospital Pharmacists Support Rutgers' Program, *Drug Topics* 96:22 (Nov. 3) 1952.

188 ANON.: Hospital Pharmacists Aid Rutgers Program, *Mid-Atlantic Pharmacist* 2:21 (Oct.) 1952.

189 ANON.: University of Tennessee Announces Graduate Program in Hospital Pharmacy, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:752 (Oct.) 1952.

190 ANON.: V. A. Hospital Pharmacy Internships, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:750 (Oct.) 1952.

191 PURDUM, W. A.: Report of Committee on Education, *Bull. Am. Soc. Hosp. Pharm.* 9:484 (Sept.-Oct.) 1952.

192 ANON.: Graduate Program at Tennessee, *Bull. Am. Soc. Hosp. Pharm.* 9:548 (Sept.-Oct.) 1952.

193 ANON.: Slides Available for Teaching, *Bull. Am. Soc. Hosp. Pharm.* 9:519 (Sept.-Oct.) 1952.

194 ANON.: Credit for Practical Experience Recommended (by N.A.B.P.), *Bull. Am. Soc. Hosp. Pharm.* 9:547 (Sept.-Oct.) 1952.

195 VAUGHAN, A.: Health Center Affords U. T. Pharmacy Majors Experience, *Texas Druggist* 71:2 (Sept.) 1952.

196 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the ASHP (Education and Training), *Bull. Am. Soc. Hosp. Pharm.* 9:363 (July-Aug.) 1952

197 ANON.: VA Plans to Offer Two-Year Course Leading Master of Science Degree, *Drug Topics* 96:3 (June 2) 1952.

198 ANON.: 1952 Graduates of Hospital Pharmacy Course at Ontario College of Pharmacy, *Hosp. Pharm.* (Canada) 5:142 (May-June) 1952.

199 FRANCKE, D. E.: Two Matters Concerning Practical Experience (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:93 (Mar.-Apr.) 1952.

200 ANON.: Nineteen Enrolled in Hospital Study, *Drug Topics* 96:52 (Feb. 11) 1952.

201 FRANCKE, D. E.: Role of Hospital Pharmacy in Pharmaceutical Education (Editorial) *Bull. Am. Soc. Hosp. Pharm.* 9:21 (Jan.-Feb.) 1952.

202 ANON.: Recent Howard Grads are Chief Pharmacists, *Drug Topics* 95:22 (Dec. 3) 1951.

203 ANON.: Okla. College Conducts Hospital Druggist Course, *Drug Topics* 95:22 (Dec. 3) 1951.

204 VANCE, J.: Hospital Pharmacy and the Philadelphia College of Pharmacy and Science, *South. Hosp.* 19:60 (Dec.) 1951.

205 MATTHEWS, A. W.: What the Foundation Can Mean to Hospital Pharmacy, *Hosp. Pharm.* (Canada) 4.291 (Nov.-Dec.) 1951.

206 ANON.: Lecturer in Hospital Pharmacy, *Hosp. Pharm.* (Canada) 4:152 (May-June) 1951.

207 BROWN, A. E.: The Value of Pharmacology, *South. Hosp.* 19:51 (Apr.) 1951.

208 REAMER, I. T.: As the President Sees It (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 8:129 (Mar.-Apr.) 1951.

209 EDWARDS:, L. D.: A Graduate Course in Hospital Pharmacy, *Am. J. Pharm. Ed.* 1:158 (Apr.) 1937.

EQUIPMENT AND FIXTURES

See also Floor Plans and Planning; Manufacturing; Parenteral Solutions.

210 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part VI: Plant Layout, *Pharm. International* 6:24 (Oct.) 1952.

211 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part V: These Steps Will Improve Your Parenteral Manufacturing, *Pharm. International* 6:28 (Sept.) 1952.

212 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part IV: The Manufacture of Coated Tablets, *Pharm. International* 6.22 (Aug.) 1952.

213 WOOD, D. G.: A simple Ampoule-Washing Device, *Am. Profess. Pharmacist* 18.630 (July) 1952. Reprinted from *Pharm. J.* (London) 168:159 (Mar. 8) 1952.

214 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part III: Here's How You Can Manufacture Compressed Tablets., *Pharm. International* 6:24 (July) 1952.

215 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part II: Elixirs, Syrups and Solutions. *Pharm. International* 6:32 (June) 19532.

216 NELSON, V. W.: Averting Stored Ether Explosions, *Hospitals* 26:57 (May) 1952.

217 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part I: The Preparation of Ointments, Emulsions, Lotions, and Suspensions. What Basic Equipment Is Needed. How to Organize the Department, *Pharm. International* 6:22 (May) 1952.

218 ANON.: Using a Vegetable Crisper for Storing Medicine Vials, *Hospitals* 26:69 (Apr.) 1952.

219 WERNERSBACH, M.: Planning a Hospital Pharmacy, *South. Hosp.* 20:58 (Apr.) 1952.

220 BECK, A. V. R.: Notes and Suggestions (Description of Pharmacy at Indiana University Medical Center), *Bull. Am. Soc. Hosp. Pharm.* 9:132 (Mar.-Apr.) 1952.

221 JOHNSTON, S. J.: Purchase of a Balance and Suppository Mold from England Recommended (Letter to the Editor), *Hosp. Pharm.* (Canada) 5:30 (Jan.-Feb.) 1952.

222 DODGE, A. H.: An Inexpensive Bottle Filling Head, *Bull. Am. Soc. Hosp. Pharm.* 9:27 (Jan.-Feb.) 1952.

223 MILNE, A. M. and TRIMBLE, G. H.: Steps in Planning the Physical Layout and Equipment of the Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:421 (Nov.-Dec.) 1951.

224 MILNE, A. M. and TRIMBLE, G. H.: Planning and Equipping a Sterile Solution Laboratory, *Bull. Am. Soc. Hosp. Pharm.* 8:421 (Nov.-Dec.) 1951.

225 KANTOR, M.: In Sterilizing Parenteral Solutions, *Am. Profess. Pharmacist* 17:562 (June) 1951.

226 ANON.: Hypospray, *Bull. Am. Soc. Hosp. Pharm.* 8:182 (May-June) 1951.

227 OSSERMAN, E. F. and MACK, A. D.: A Simple Apparatus for Multiple, Uniform Intravenous Injections, *Am. Profess. Pharmacist* 17:455 (May) 1951. Reprinted from *Science* 112:148 (1950).

228 ARCHAMBAULT, G. F.: Standards for Prescription Containers, *Bull. Am. Soc. Hosp. Pharm.* 8:108 (Mar.-Apr.) 1951.

229 MILNE, A. M. and TRIMBLE, G. H.: Suggested Equipment Lists for Hospital Pharmacies of 50, 100 and 200 Bed General Hospitals, *Bull. Am. Soc. Hosp. Pharm.* 8:102 (Mar.-Apr.) 1951.

230 MORDOVANCY, M. and SKOLAUT, M. W.: Portable Elevating Mixer Stand, *Bull. Am. Soc. Hosp. Pharm.* 8:128 (Mar-Apr.) 1951.

EXHIBITS

231 GORMLEY, A. F.: The Present and Future Importance of Hospital Exhibits, *Drug and Cosmetic Industry* 70:756 (June) 1952.

232 ANON.: Drug Exhibits (Small Hospital Questions) *Modern Hosp.* 78:47 (Apr.) 1952.

233 WOLFE, E.: The VA Pharmacy Service Exhibit, *Bull. Am. Soc. Hosp. Pharm.* 8:267 (July-Aug.) 1951.

234 ANON.: Pharmacy Display, *Hosp. Pharm.* (Canada) 4:98 (Mar.-Apr.) 1951.

FLOOR PLANS AND PLANNING

235 MILNE, A. M.: Planning Hospital Pharmacies, *Am. Profess. Pharmacist* 18:1086 (Dec.) 1952.

236 ANON.: Better Locations for Hospital Units Urged by Dretzka, *Drug Topics* 96:17 (Dec. 1) 1952.

237 WERNERSBACH, M.: Planning a Hospital Pharmacy, *South. Hosp.* 20:58 (Apr.) 1952.

238 MILNE, A. M. and TRIMBLE, G. H.: *Steps in* Planning the Physical Layout and Equipment of the Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:421 (Nov.-Dec.) 1951.

239 MILNE, A. M. and TRIMBLE, G. H.: Planning and Equipping a Sterile Solution Laboratory, *Bull. Am. Soc. Hosp. Pharm.* 8:421 (Nov.-Dec.) 1951.

240 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part VI: Plant Layout, *Pharm. International* 6:24 (Oct.) 1952.

241 ANON: Elements of the General Hospital: Pharmacy, *Hospitals* 26:92 (Apr.) 1952.

FOREIGN AND INTERNATIONAL

242 GRAINGER, H.: Development of Hospital Pharmacy in Great Britain, *Bull. Am. Soc. Hosp. Pharm.* 9:586 (Nov.-Dec.) 1952.

243 ANON.: International Congress of Hospital Pharmacy Meets in Switzerland, *Bull. Am. Soc. Hosp. Pharm.* 9:596 (Nov.-Dec.) 1952.

244 ANON.: Congress of Hospital Pharmacists Meeting at Basle, *Pharm. J.* (London) 169:241 (Oct. 4) 1952.

245 MORICE, R. L. J.: The Practice of Pharmacy in France, *Pharm. J.* (London) 169:226 (Sept. 27) 1952.

246 ANON.: Prescription Men Supply Hospital M.D.'s with Information, *Drug Topics* 96:40 (Sept. 22) 1952.

247 ANON.: Our Delegate at the International Congress, *Hosp. Pharm.* (Canada) 5:251 (Sept.-Oct.) 1952.

248 ANON.: Program for Hospital Pharmacists' Section, Ontario Hospital Association Convention, *Hosp. Pharm.* (Canada) 5:254 (Sept.-Oct.) 1952.

249 ANON.: To International Congress, *Bull. Am. Soc. Hosp. Pharm.* 9:547 (Sept.-Oct.) 1952.

250 GRAINGER, H. S.: International Hospital Pharmacy, *Pharm. J.* (London) 169:134 (Aug. 23) 1952.

251 ANON.: International Hospital Pharmacy (Editorial) *Pharm. J.* (London) 169:125 (Aug. 23) 1952.

252 BURR C. W.: Truly a National Society (Editorial), *Hosp. Pharm.* (Canada) 5:195 (July-Aug.) 1952.

253 ANON.: President C. W. Burr Chairs C.S.H.P. Executive Meeting, *Hosp. Pharm.* (Canada) 5:210 (July-Aug.) 1952.

254 GREIG, R. S. F.: Pharmacy in Australia (Queensland) *Pharm. J.* (London) 169:53 (July 19) 1952.

255 ANON.: Ist International Congress of Hospital Pharmacists, *Pharm. International* 6:23 (June) 1952.

256 BURR, C. W.: Pharmacy Across Canada, *Hosp. Pharm.* (Canada) 5:129 (May-June) 1952.

257 ANON.: First International Congress of Hospital

Pharmacists, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:366 (May) 1952.

258 ANON.: First International Congress of Hospital Pharmacists, *Am. Profess. Pharmacist* 18:445 (May) 1952.

259 ANON.: First International Congress of Hospital Pharmacists To Be Held in Basle, Switzerland, *Am. J. Pharm.* 124:170 (May) 1952.

260 CHEYMOL, J.: Hospital Pharmacy in France, *Am. Profess. Pharmacist* 18:346 (Apr.) 1952.

261 BURR, C. W.: The President's Point of View, *Hosp. Pharm.* (Canada) 5:85 (Mar.-Apr.) 1952.

262 ANON.: Hospital Pharmacists Hold Canadian Meeting, *Drug Topics* 96:54 (Mar. 10) 1952.

263 ANON.: Annual Reports (Canadian Society of Hospital Pharmacists), *Hosp. Pharm.* (Canada) 5:37 (Jan.-Feb.) 1952.

264 PEPPER, A.; RICHARD, J. G.; and MCKENNA, J.: Report of Committee Studying Provincial Acts in Regard to Hospital Pharmacists, *Hosp. Pharm.* (Canada) 4:312 (Nov.-Dec.) 1951.

265 ANON.: Report on Hospital Pharmacy Section at Ontario Hospital Association Convention, *Hosp. Pharm.* (Canada) 4:289 (Nov.-Dec.) 1951.

266 BURR, C. W. and TOLAN, E. S.: Hospital Pharmacists Report on C.Ph.A. Convention, *Hosp. Pharm.* (Canada) 4:255 (Sept.-Oct.) 1951.

267 COOK, J. F.: Your Society at Work, *Hosp. Pharm.* (Canada) 4:200 (July-Aug.) 1951.

268 SMITH, G.: The Pharmacy Corps, *Hosp. Pharm.* (Canada) 4:190 (July-Aug.) 1951.

269 COOK, J. F.: Your Society at Work, *Hosp. Pharm.* (Canada) 4:151 (May-June) 1951.

270 ANON.: Hospital Pharmacy Within the Commonwealth, *Hosp. Pharm.* (Canada) 4:163 (May-June) 1951.

271 ANON.: Planning Hospital Pharmacies (Editorial), *Pharm. J.* (London) 166:245 (Apr. 7) 1951.

272 COOK, J. F.: Your Society at Work, *Hosp. Pharm.* (Canada) 4:88 (Mar.-Apr.) 1951.

273 DENO, R. A.: Pharmacy in France, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:164 (Mar.) 1951.

274 ANON.: Hospital Pharmacists of Canada Elect Burr, *Drug Topics* 95:54 (Feb. 12) 1951.

275 OLYNYK, I. O.: Report of Annual Meeting (C.S.H.P.) *Hosp. Pharm.* (Canada) 4:37 (Jan.-Feb.) 1951.

276 ANON.: Annual Reports (C.S.H.P.) *Hosp. Pharm.* (Canada) 4:48 (Jan.-Feb.) 1951.

277 ANON.: Canada Hospital Men Name Cunningham Head, *Drug Topics* 95:50 (Jan. 15) 1951.

GOVERNMENT

278 TOWNE, C. G.: Report of Committee on Pharmacists in Government Service, *Bull. Am. Soc. Hosp. Pharm.* 9:483 (Sept.-Oct.) 1952.

279 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the ASHP (Pharmacists in Government Services), *Bull. Am. Soc. Hosp. Pharm.* 9:333 (July-Aug.) 1952.

280 SKOLAUT, M. W.: Report of Committee on Pharmacists in Government Service, *Bull. Am. Soc. Hosp. Pharm.* 8:321 (Sept.-Oct.) 1951.

AIR FORCE

281 LARNCE, P. C.: Advancement of Hospital Pharmacy in the Government Services: The U. S. Air Force, *Bull. Am. Soc. Hosp. Pharm.* 9:274 (July-Aug.) 1952.

ARMY

282 ROTH, H. D.: Advancement of Hospital Pharmacy in the Government Services: The U. S. Army, *Bull. Am. Soc. Hosp. Pharm.* 9:264 (July-Aug.) 1952.

283 MCNAMARA, J. W.: Pharmacy Service—Walter Reed Army Hospital, *Bull. Am. Soc. Hosp. Pharm.* 9:118 (Mar.-Apr.) 1952.

NAVY

284 TAYLOR, R. L.: Advancement of Hospital Pharmacy in the Government Service; The U. S. Navy, *Bull. Am. Soc. Hosp. Pharm.* 9:268 (July-Aug.) 1952.

285 FOWLER, J. E. and ST. JACQUES, O. A.: The New Look in the Navy Pharmacy, *Am. Profess. Pharmacist* 7:824 (Sept.) 1951.

286 ANON.: Navy Surgeon General Plans No Pharmacy Policy Changes, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:154 (Mar.) 1951.

287 BLIVEN, C. W.: The Hospital Corps School of the United States Marine Service, *Am. J. Pharm. Ed.* 7:150 (Apr.) 1943.

288 BRIGGS, W. P.: Pharmacy and the Hospital Corps of the United States Navy, *Am. J. Pharm. Ed.* 6:465 (Oct.) 1942.

PUBLIC HEALTH SERVICE

289 ARCHAMBAULT, G. F., and FITZGERALD, E. J.: Advancement of Hospital Pharmacy in the Government Services: The U. S. Public Health Service, *Bull. Am. Soc. Hosp. Pharm.* 9:270 (July-Aug.) 1952.

290 ANON.: Announcement of U.S.P.H.S. Internship Program in Hospital Pharmacy, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:366 (May) 1952.

291 ANON.: Hospital Pharmacy Internships Planned by Government Services, *Am. Profess. Pharmacist* 18:440 (May) 1952.

292 ANON.: Public Health Service Internships, *Bull. Am. Soc. Hosp. Pharm.* 9:141 (Mar.-Apr.) 1952.

293 TRAUTMAN, J. A.; MASUR, J.; and ARCHAMBAULT, G. F.: Clinical Center—National Institutes of Health, *Bull. Am. Soc. Hosp. Pharm.* 9:38 (Jan.-Feb.) 1952.

294 ANON.: Thomas A. Foster to Serve as Pharmacist Director of U.S.P.H.S., *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:448 (July) 1951.

VETERANS ADMINISTRATION

295 ANON.: VA Hospital Pharmacy Internships, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:750 (Oct.) 1952.

296 WOLFE, E.: VA Inaugurates Graduate Program, *Bull. Am. Soc. Hosp. Pharm.* 9:541 (Sept.-Oct.) 1952.

297 ANON.: Rotating Prescription Men Are Utilized by VA to Cover Hospitals, *Drug Topics* 96:17 (Aug. 11) 1952.

298 ANON.: VA Recommends Two-Year Residency and Training for Hospital Pharmacists, *Modern Hosp.* 79:176 (Aug.) 1952.

299 GEIGER, E. B.: Advancement of Hospital Pharmacy in the Government Services: The Veterans Administration, *Bull. Am. Soc. Hosp. Pharm.* 9:261 (July-Aug.) 1952.

300 ANON.: VA Plans to Offer Two-Year Course Leading to Master of Science Degree, *Drug Topics* 96:3 (June 2) 1952.

301 ANON.: Announcement of VA Residency Program in Hospital Pharmacy, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:365 (May) 1952.

302 ANON.: Hospital Pharmacy Internships Planned by Government Service, *Am. Profess. Pharmacist* 18:440 (May) 1952.

303 ANON.: VA Recommends Pharmacy Training Program, *Hospitals* 26:189 (Apr.) 1952.

304 ANON.: VA Proposes Academic Program, *Bull. Am. Soc. Hosp. Pharm.* 9:142 (Mar.-Apr.) 1952.

305 ERDELJON, C. U.: Pharmacy Organization in a VA Center, *Am. Profess. Pharmacist* 18:54 (Jan.) 1952.

306 WOLFE, E.: Meet a Veterans Administration Pharmacist, *Bull. Am. Soc. Hosp. Pharm.* 9:63 (Jan.-Feb.) 1952; 9:540 (Sept.-Oct.) 1952; and 8:385 (Sept.-Oct.) 1951.

307 ANON.: VA Formulary, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:734 (Nov.) 1951.

308 ANON.: VA May Employ Non-Degree Prescription Men, *Drug Topics* 95:46 (June 18) 1951.

309 ANON.: U. S. Veterans Administration Tribute to Pharmacy, *Hosp. Pharm.* (Canada) 4:161 (May-June) 1951.

310 ANON.: Former Army Captain Heads VA Prescription Staff, *Drug Topics* 95:18 (Feb. 26) 1951.

311 WOLFE, E.: VA Hospital Pharmacy Department (Bedford, Mass.), *Bull. Am. Soc. Hosp. Pharm.* 8:72 (Jan.-Feb.) 1951.

HISTORY

312 ANON.: 1952, A Memorable Year in Pharmacy—Hospital Pharmacy, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:852 (Dec.) 1952.

313 GRAINGER, H. S.: Development of Hospital Pharmacy in Great Britain, *Bull. Am. Soc. Hosp. Pharm.* 9:586 (Nov.-Dec.) 1952.

314 SCOTT, B. M.: Looking at the Last Twenty-Three Years in Hospitals, *Am. Profess. Pharmacist* 18:809 (Sept.) 1952.

315 FISCHELIS, R. P.: A.Ph.A. Centennial (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:241 (July-Aug.) 1952.

316 FRANCKE, D. E.: A Salute to the A.Ph.A. (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:245 July-Aug.) 1952.

317 FRAZIER, W. M.: Tenth Anniversary of ASHP (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 9:243 (July-Aug.) 1952.

318 KNEIFL, M. R.: Advancement of Pharmacy Services in Catholic Hospitals, *Bull. Am. Soc. Hosp. Pharm.* 9:251 (July-Aug.) 1952.

319 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the American Society of Hospital Pharmacists, *Bull. Am. Soc. Hosp. Pharm.* 9:277 (July-Aug.) 1952.

320 PARKER, P.: The Pharmacist and the Hospital Team, *Am. Profess. Pharmacist* 18:534 (June) 1952.

321 ANON.: 1951 in Review: Hospital Pharmacy, *J. Am. Pharm. Assoc., Pract. Pharm.* Ed. 12:758 (Dec.) 1951.

322 PEACOCK, G. W.: Hospitals and Their History, *Hosp. Pharm.* (Canada), 4:237 (Sept.-Oct.) 1951.

323 ANON.: Pennsylvania's Pharmacy, *Hosp. Management* 71:86 (Jan.) 1951.

HOSPITAL SURVEY AND CONSTRUCTION ACT

See also Floor Plans and Planning; Equipment and Fixtures

324 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the ASHP (Hospital Survey and Construction Act), *Bull. Am. Soc. Hosp. Pharm.* 9:336 (July-Aug.) 1952.

INSTITUTES

325 FREDERICK, D.: Impressions of the Toronto Institute, *Bull. Am. Soc. Hosp. Pharm.* 9:583 (Nov.-Dec.) 1952.

326 ANON.: Announcement of 1953 Institute on Hospital Pharmacy, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:752 (Oct.) 1952.

327 SCHNEIDER, A.: Report on the 8th Institute on Hospital Pharmacy, *Texas Druggist* 71:2 (Oct.) 1952.

328 ANON.: 1953 Institute, *Bull. Am. Soc. Hosp. Pharm.* 9:547 (Sept.-Oct.) 1952.

329 PRUITT, H. V.: The Institute Story, *Hospitals* 26:63 (Sept.) 1952.

330 DAVIES, D.: An Undergraduate's Impressions of the 8th Institute, *Hosp. Pharm.* (Canada) 5:193 (July-Aug.) 1952.

331 KNEIFL, M. R.: Advancement of Pharmacy Services in Catholic Hospitals, *Bull, Am. Soc. Hosp. Pharm.* 9:251 (July-Aug.) 1952.

332 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the ASHP (Institutes), *Bull. Am. Soc. Hosp. Pharm.* 9:369 (July-Aug.) 1952.

333 ANON.: Institute Briefs, *Hosp. Pharm.* (Canada) 5:202 (July-Aug.) 1952.

334 ANON.: Canadian Impressions of the Institute, *Hosp. Pharm.* (Canada) 5:199 (July-Aug.) 1952.

335 ANON.: The Fourth Annual Institute, *Hosp. Progress* 33:68 (July) 1952.

336 VANCE, J.: 1952 Institute on Hospital Pharmacy, *South. Hosp.* 20:64 (June) 1952.

337 ANON.: Institute on Hospital Pharmacy, *Hosp. Pharm.* (Canada) 5:138 (May-June) 1952.

338 ANON.: Program for the 4th Annual Institute, *Hosp. Progress* 33:80 (May) 1952.

339 ANON.: Hospital Pharmacists of United States and Canada Hold First Joint Institute, *Am. Profess. Pharmacist* 18:442 (May) 1952.

340 ANON.: University of Texas to Host Hospital Pharmacists at Annual April Seminar, *Drug Topics* 96:38 (Apr. 7) 1952.

341 ANON.: Hospital Pharmacists Hold Annual Sem-

inar, April 21-22 on U. T. Campus, *Texas Druggist* 71:28 (Apr.) 1952.

342 SISTER MARY CARL: 4th Annual Institute for Hospital Pharmacists, *Hosp. Progress* 33:76 (Apr.) 1952.

343 ANON.: Eighth Institute on Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 9:114 (Mar.-Apr.) 1952.

344 ANON.: Institute on Hospital Pharmacy, *Hosp. Pharm.* (Canada) 5:73 (Mar.-Apr.) 1952.

345 SISTER FRANCES DEPAUL: Impressions of the Philadelphia Institute, *Hosp. Pharm.* (Canada) 4:251 (Sept.-Oct.) 1951.

346 ANON.: The 1951 Institutes on Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:252 (July-Aug.) 1951.

347 ANON.: Hospital Pharmacists Hold Two Institutes, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:434 (July) 1951.

348 ANON.: The Third Institute for (Catholic) Hospital Pharmacists, *Hosp. Progress* 32:215. (July) 1951.

349 ANON.: Hospital Pharmacy Seminar, *Bull. Am. Soc. Hosp. Pharm.* 8:186 (May-June) 1951.

350 ANON.: Hospital Prescription Men Plan Refresher, *Drug Topics* 95:34 (May 21) 1951.

351 ANON.: Texas Hospital Pharmacists Meet in Austin, April 23-24, *Texas Druggist* 70:34 (Apr.) 1951.

352 ANON.: 7th Institute on Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:111 (Mar.-Apr.) 1951.

353 VANCE, J.: Texas Seminar in Spring, *South. Hosp.* 19:51 (Feb.) 1951.

354 VANCE, J.: The Hospital Pharmacy Institute (New Orleans), *South. Hosp.* 19:47 (Feb.) 1951.

INTERNSHIPS

355 ANON.: Three Hospitals Are Cooperating in Grad Program, *Drug Topics* 96:22 (Oct. 6) 1952.

356 ANON.: VA Hospital Pharmacy Internships, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:750 (Oct.) 1952.

357 ANON.: Graduate Program at Tennessee, *Bull. Am. Soc. Hospital Pharm.* 9:548 (Sept.-Oct.) 1952.

358 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the ASHP (Internships) *Bull. Am. Soc. Hosp. Pharm.* 9:366 (July-Aug.) 1952.

359 ANON.: VA Plans to Offer Two-Year Course Leading to Master of Science Degree, *Drug Topics* 96:3 (June 2) 1952.

360 ANON.: Graduating Interns in Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 9:198 (May-June) 1952.

361 ANON.: Internship Announced, *Bull. Am. Soc. Hosp. Pharm.* 9:214 (May-June) 1952.

362 ANON.: Hospital Pharmacy Internships Planned by Government Service, *Am. Profess. Pharmacist* 18:440 (May) 1952.

363 ANON.: VA Recommends Pharmacy Training Program, *Hospitals* 26:189 (Apr.) 1952.

364 ANON.: Internships in Hospital Pharmacy, *Am. Profess. Pharmacist* 18:354 (Apr.) 1952.

365 FLACK, H. L.: Personnel Wanted: Chief Pharmacist for Hospital, *Hosp. Pharm.* (Canada) 5:91 (Mar.-Apr.) 1952.

366 ANON.: VA Proposes Academic Program, *Bull. Am. Soc. Hosp. Pharm.* 9:142 (Mar.-Apr.) 1952.

367 ANON.: Public Health Service Internships, *Bull. Am. Soc. Hosp. Pharm.* 9:141 (Mar.-Apr.) 1952.

368 ANON.: Philadelphia Schools Sponsor Course in Hospital Pharmacy, *Drug Topics* 96:21 (Mar. 10) 1952.

369 FLACK, H. L.: Opportunities in Hospital Pharmacy for 1952 Pharmacy Graduates, *Bull. Am. Soc. Hosp. Pharm.* 9:46 (Jan.-Feb.) 1952.

370 ANON.: Awarding of Internship Certificates, *Hosp. Pharm.* (Canada) 4:299 (Nov.-Dec.) 1951.

371 SISTER M. ETHELDREDA: Report of Committee on Minimum Standards, *Bull. Am. Soc. Hosp. Pharm.* 8:319 (Sept.-Oct.) 1951.

372 ANON.: Philadelphia Hospital Awards Certificates, *Drug Topics* 95:24 (Sept. 10) 1951.

373 STEELE, F. J.: The New Pharmacy Department at Greenwich, *Bull. Am. Soc. Hosp. Pharm.* 8:249 (July-Aug.) 1951.

374 ANON.: Patterning Internships Away from Teaching Centers, *Am. Profess. Pharmacist* 17:556 (June) 1951.

375 ANON.: Philadelphia Institutions Consider Applicants for Hospital Intern Course, *Drug Topics* 95:36 (May 7) 1951.

376 REAMER I. T.: As the President Sees It, *Bull. Am. Soc. Hosp. Pharm.* 8:129 (Mar.-Apr.) 1951.

377 ANON.: Graduating Interns in Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:130 (Mar.-Apr.) 1951.

378 PURDUM, W. A.: Research and Graduate Instruction for Hospital Pharmacists, *Am. J. Pharm. Ed.* 14:216 (Jan.) 1950.

379 WHITNEY, H.A.K.: Appointment as Pharmacy Intern, *Am. J. Pharm. Ed.* 8:274 (Apr.) 1944.

380 LYMAN, R. A.: Hospital Internship in Pharmacy, *Am. J. Pharm. Ed.* 3:393 (July) 1939.

LAWS AND REGULATIONS

381 ANON.: A Case for Hospital Pharmacy Inspections, *Am. Profess. Pharmacist* 18:1003 (Nov.) 1952.

382 ANON.: Briefly Noted Dept. (Hospital Regulations of the Washington State Board of Pharmacy), *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13: 590 (Aug.) 1952.

383 ANON.: Clinic Pharmacy Drops Suit Against Board in Montana, *Drug Topics* 96:2 (Feb. 11) 1952.

384 PEPPER, A.; RICHARD, J. G.; and MCKENNA, J.: Report of Committee Studying Provincial Acts in Regard to Hospital Pharmacists, *Hosp. Pharm.* (Canada) 4:312 (Nov.-Dec.) 1951.

385 JONES, J. H.: State Inspection of Hospital Pharmacies, *Am. Profess. Pharmacist* 17:924 (Oct.) 1951.

386 ANON.: M.D. Pharmacy is Held Legal in Colorado, *Drug Topics* 95:4 (June 18) 1951.

387 ANON.: Hospital Man Wanted (on State Board), *Drug Topics* 95:118 (May 7) 1951

388 ANON.: Calif. Hospital Warned It Must Employ Prescription Man, *Drug Topics* 95:16 (Apr. 9) 1951.

389 ANON.: N. Y. Kills Bill for Prescription Men in

Hospitals, *Drug Topics* 95:16 (Mar. 26) 1951.

390 ANON.: Hospital Must Obtain License, *N.A.B.P. Bulletin* 7:8 (Jan.-Feb.) 1948.

391 ANON.: Board Regulations of Hospital Pharmacies, *N.A.B.P. Bulletin* 6:7 (Nov.-Dec.) 1946.

392 ANON.: Hospital Pharmacies, *N.A.B.P. Bulletin* 6:7 (Mar.-Apr.) 1946.

393 ANON.: Permit for Hospital Pharmacies Required in Pennsylvania, *N.A.B.P. Bulletin* 6:2 (Jan.-Feb.) 1946.

LIBRARY AND REFERENCE

395 ANON.: Pharmacy Journal Rack, *Am. Druggist* 126:54 (Nov. 24) 1952.

396 VANCE, J.: One for the Library: "Pharmacology In Clinical Practice," *South. Hosp.* 20:62 (Oct.) 1952.

397 STAUFFER, I. and Matthews, A. W.: A New Reference Tool for Pharmacists, *Hosp. Pharm.* (Canada) 5:245 (Sept.-Oct.) 1952.

398 STAUFFER, I.: A Library and Reference Service for Hospital Pharmacies, *Bull. Am. Soc. Hosp. Pharm.* 9:524 (Sept.-Oct.) 1952.

399 VANCE, J.: The Merck Index of Chemicals and Drugs, 6th Edition, *South. Hosp.* 20:66 (June) 1952.

400 SCHNEIDER, A.: Professional Services the Pharmacist Can Render the Medical Staff, *South Hosp.* 20:62 (Feb.) 1952.

401 HOWIE, J. W.: On Writing to Be Read, *Hosp. Pharm.* (Canada) 4:303 (Nov.-Dec.) 1951.

402 ANON.: Library and Reference System, *Hosp. Pharm.* (Canada) 4:295 (Nov.-Dec.) 1951.

403 ANON.: "Practice of Pharmacy" offers Chapter on Hospital Pharmacy, *Hosp. Management* 72: 106 (Oct.) 1951.

404 THIEL, A. D.: A Review of the National Formulary, Ninth Edition, 1950, *Hosp. Management* 72:106 (Sept.) 1951.

405 LOWE, D. J.: Drug Information Sources, *Drug and Cosmetic Industry* 68:588 (May) 1951.

406 ANON.: Formulary of Jefferson Medical College Hospital, 1950, *Hosp. Pharm.* (Canada) 4:93 (Mar.-Apr.) 1951.

407 VANCE, J.: New Remington, 10th Edition, *South. Hosp.* 19:53 (Mar.) 1951.

408 FRANCKE, D. E.: Bibliography on Hospital Pharmacy (Editorial) *Bull. Am. Soc. Hosp. Pharm.* 8:15 (Jan.-Feb.) 1951.

409 NIEMEYER, G.: Comprehensive Bibliography on Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 8:27 (Jan.-Feb.) 1951.

410 VANCE, J.: Drug Research and Development, *South. Hosp.* 19:55 (Jan.) 1951.

MANUFACTURING

411 DENAVARRE, M. G.: Cosmetic Aspects of Pharmaceutical Ointments, *Bull. Am. Soc. Hosp. Pharm.* 9:579 (Nov.-Dec.) 1952.

412 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part VI: Plant Layout. *Pharm. International* 6:24 (Oct.) 1952.

413 DEKAY, H. G.: A Review of Some Dispersing and Suspending Agents, *Bull. Am. Soc. Hosp. Pharm.* 9:520 (Sept.-Oct.) 1952.

414 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part V: These Steps Will Improve Your Parenteral Manufacturing, *Pharm. International* 6:28 (Sept.) 1952.

415 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part IV: The Manufacture of Coated Tablets, *Pharm. International* 6:22 (Aug.) 1952.

416 DENAVARRE, M. G.: The Newer Ointment Bases, *Hosp. Pharm.* (Canada), 5:205 (July-Aug.) 1952.

417 ANON.: Coloring Non-Injectable Fluids, *Hosp. Pharm.* (Canada) 5:204 (July-Aug.) 1952.

418 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part III: Here's How You Can Manufacture Compressed Tablets, *Pharm. International* 6:24 (July) 1952.

419 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part II: Elixirs, Syrups and Solutions, *Pharm. International* 6:32 (June) 1952.

420 CHAVKIN, L. T.: Manufacturing on a Small Scale, Part I: The Preparation of Ointments, Emulsions, Lotions, and Suspensions. What Basic Equipment Is Needed. How to Organize the Department, *Pharm. International* 6:22 (May) 1952.

421 BECK, A. V. R.: Notes and Suggestions (Description of Pharmacy at Indiana University Medical Center), *Bull. Am. Soc. Hosp. Pharm.* 9:132 (Mar.-Apr.) 1952.

422 CHAVKIN, L. T.: Pharmaceutical Manufacturing on a Small Scale—Some General Problems and Considerations Involved in the Selection of Equipment and Planning the Layout of a Small Manufacturing Plant, *Pharm. International* 6:36 (Mar.) 1952.

423 BECK, A. V. R.: Manufacturing in the Pharmacy, *Hosp. Management* 73:94 (Feb.) 1952.

424 SHERWOOD, R. R.: Dermatological Preparations: Choosing the Proper Vehicle, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:58 (Jan.) 1952.

425 ANON.: Substitutes in Drugs (comment), *Hospitals* 25:120 (Dec.) 1951.

426 DANCE, F. H.: The Metric System in Manufacturing Pharmacy, *Hosp. Pharm.* (Canada) 4:287 (Nov.-Dec.) 1951.

427 SPERANDIO, G. J.: Chlorophyll and Its Medicinal and Pharmaceutical Application, *Bull. Am. Soc. Hosp. Pharm.* 8:292 (Sept.-Oct.) 1951.

428 PURDUM, W. A.: Hospital Manufacturing, *Texas Druggist* 70:27 (Aug.) 1951.

429 MIYA, M. and DEKAY, H. G.: A Survey of Bulk Compounding in Hospital Pharmacies, *Am. Profess. Pharmacist* 17:644 (July) 1951.

430 STATIA, P.: Let the Pharmacist Do It, *Am. Pharmacist* 17:448 (May) 1951.

430 STATIA, P.: Let the Pharmacist Do It, *Am. Profess. Pharmacist* 17:448 (May) 1951.

432 SISTER M. ANCILLA: Manufacture or Buy, *Hosp. Progress* 32:90 (Mar.) 1951.

433 BUCK, F. D.: Chlorophyll—What? Where? How? *Hosp. Pharm.* (Canada) 4:43 (Jan.-Feb.) 1951.

434 BENTON, B. E.: Manufacturing for Hospital Pharmacy, *Am. J. Pharm. Ed.* 14:125 (Jan.) 1950.

NARCOTICS

435 Zugich, J. J.: Narcotic Regulations and Procedures for Hospitals, *Am. Profess. Pharmacist* 18:998 (Nov.) 1952.

436 Trygstad, V. O.: Report of Committee on Narcotic Regulations, *Bull. Am. Soc. Hosp. Pharm.* 9:485 (Sept.-Oct.) 1952.

437 Anslinger, H. J.: Narcotic Control by Physicians, *J. Am. Med. Assoc.* 148:1275 (Apr. 12) 1952.

438 Sister Marie Patrick: Uniform Narcotic Regulations, *Hosp. Progress* 33:82 (Feb.) 1952.

439 Anon.: Drugs Are Stolen at Nebraska Hospitals, *Drug Topics* 96:137 (Jan. 14) 1952.

440 Sister M. Pius: Narcotics In Solution Provide Uniform Accurate Dosage, *Modern Hosp.* 77:71 (Nov.) 1951.

441 Dodds, A. W.: Report of Committee on Narcotic Regulations, *Bull. Am. Soc. Hosp. Pharm.* 8:324 (Sept.-Oct.) 1951.

442 Atkins, K. K.: A Narcotic Control System for Use in the Small Hospital, *Hospitals* 25:95 (Feb.) 1951.

OUTPATIENT DEPARTMENT

443 Anon.: Hospital Prescription Service (Resolution on, by A.Ph.A., 1952 Convention), *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 13:636 (Sept.) 1952.

444 Anon.: Oklahoma Hospital Plans Pharmacy for Poor, *Drug Topics* 96:96 (Aug. 11) 1952.

445 Sykes, J.: How One Memphis Hospital Operates Its Outpatient Pharmacy, *Hosp. Management* 73:108 (Jan.) 1952.

446 Anon.: Sees Hospital Outpatient Prescription Services As Hurting Economic Life of Druggist, *Drug Topics* 95:3 (Aug. 27) 1951.

447 Swain, R. L.: Frank Moudry States the Problem (Editorial) *Drug Topics* 95:21 (July 30) 1951.

448 Deutsch, D.: Pharmacist in a Dispensary, *Tile and Till* 36:14 (Jan.-Feb.) 1951.

449 Heard, J. S.: Pharmacy Outpatient Service, *Am. Profess. Pharmacist* 17:60 (Jan.) 1951.

PARENTERAL SOLUTIONS

Includes Central Supply

450 Archambault, G. F.: Hermetically Packaged Surgical Fluids, *Pharm. International* 6:35 (Dec.) 1952.

451 Sister Mary John: A Timely Step for Hospital Organizations: Central Supply and Pharmacy Combinations, *Am. Profess. Pharmacist* 18:898 (Oct.) 1952.

452 Zugich, J. J.: An Editorial Comment on Central Supply Supervision by Hospital Pharmacists, *Am. Profess. Pharmacist* 18:904 (Oct.) 1952.

453 Vance, J.: Manufacturing Solutions, *South. Hosp.* 20:64 (Oct.) 1952.

454 Phillips, G. L.: Report of Committee on Parenterals, *Bull. Am. Soc. Hosp. Pharm.* 9:491 (Sept.-Oct.) 1952.

455 Anon.: Medical Notes and Comment: Disposable Equipment, *Hospitals* 26:96 (Sept.) 1952.

456 Groner, P. N.; Fisher, P. R.; and Sister M. Fidelis: If I Had it to do Over Again, *Hospitals* 26:34 (Sept.) 1952.

457 Chavkin, L. T.: Manufacturing on a Small Scale, Part V: These Steps Will Improve Your Parenteral Manufacturing, *Pharm. International* 6:28 (Sept.) 1952.

458 Sambridge, F. W.: The Preparation of Intrathecal Injections, *Pharm. J.* (London) 169:116 (Aug. 16) 1952.

459 Appleton, J. D.: The Operation of a Syringe Service, *Pharm. J.* (London) 169:82 (Aug. 2) 1952.

460 Feldman, D.: Flow Regulator for Intravenously Administered Fluids, *J. Am. Med. Assoc.* 149: 1017 (July 12) 1952.

461 Archambault, G. F.: Hermetically Packaged Water and Surgical Fluids, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:415 (June) 1952.

462 Statia, P.: The Manufacture and Packaging of Parenterals, *Hosp. Pharm.* (Canada) 5:148 (May-June) 1952.

463 Morgan, M. E.: A Modern Pharmacy for a Small Hospital, *Bull. Am. Soc. Hosp. Pharm.* 9:188 (May-June) 1952.

464 Anon.: More About Operating Room Hazards, *Hosp. Pharm.* (Canada) 5:139 (May-June) 1952.

465 Anon.: Colour in the Theatre (Editorial) *Pharm. J.* (London) 168:276 (Apr. 26) 1952.

466 Donohue, F. M. and Statia, P. C.: Postnatal Perineal Care: A New Concept, *Hosp. Pharm.* (Canada) 5:71 (Mar.-Apr.) 1952.

467 Murphy, J. T. and Stoklosa, M. J.: The Effect of Autoclaving on the Stability of Solutions, *Bull. Am. Soc. Hosp. Pharm.* 9:94 (Mar.-Apr.) 1952

468 Anon.: Operating Room Hazards: Injectables, *Hosp. Pharm.* (Canada) 5:84 (Mar.-Apr.) 1952.

469 Anon.: Injection Routine in Operating Theatre—Ministry of Health Inquiry, *Pharm. J.* (London) 168:141 (Mar. 1) 1952.

470 Milne, A. M. and Trimble, G. H.: Planning and Equipping a Sterile Solution Laboratory, *Bull. Am. Soc. Hosp. Pharm.* 8:421 (Nov.-Dec.) 1951.

471 Phillips, G. L.: Report of Committee on Parenteral Containers, *Bull. Am. Soc. Hosp. Pharm.* 8:331 (Sept.-Oct.) 1951.

472 Sister M. Franciscana: Does It Pay to Make Solutions in a Hospital? *Bull. Am. Soc. Hosp. Pharm.* 8:374 (Sept.-Oct.) 1951.

473 Fay, R. V.: Why We Do Not Manufacture Parenteral Solutions, *Hosp. Management* 72:64 (Aug.) 1951.

474 Sister M. Donatus: The Importance of Parenteral Solutions, *Pharm. International* 5:16 (July) 1951.

475 Kantor, M.: In Sterilizing Parenteral Solutions, *Am. Profess. Pharmacist* 17:562 (June) 1951.

476 Osserman, E. F. and Mack, A. D.: A Simple Apparatus for Multiple, Uniform Intravenous Injections, *Am. Profess. Pharmacist* 17:455 (May) 1951.

477 Statia, P.: Let the Pharmacist Do It, *Am. Profess. Pharmacist* 17:448 (May) 1951.

478 Rice, F. L.: Sterilizers in the Hospital, *Pharm. International* 5:26 (Feb.) 1951.

PHARMACY AND THERAPEUTICS COMMITTEE

Includes Formularies; *See also* Standards and Standardization

479 ANON.: Suggested Drugs Listed in F.S.A. Hospital Guide, *Drug Trade News* 27:29 (Nov. 24) 1952.

480 ANON.: Public Health Service Study Urges Prescribing of Unbranded Drugs, *Drug Trade News* 27:1 (Nov. 10) 1952.

481 RICE, H. L.: Is a Formulary System Necessarily Best? *Am. Profess. Pharmacist* 18:1004 (Nov.) 1952.

482 ANON.: Hospital Prepares New Medical Formulary, *Drug Topics* 96:16 (Oct. 20) 1952.

483 SISTER REGINA MARIE: Compiling the Hospital Formulary, *Hosp. Pharm.* (Canada) 5:269 (Sept.-Oct.) 1952.

484 BATES, J.: Are We to Have Socialized Pharmacy? (Editorial) *Southeastern Drug J.* 26:20 (Sept.) 1952.

485 ANON.: The New York Hospital Formulary, *Pharm. J.* (London) 169:204 (Sept. 20) 1952.

486 SISTER MARY BERENICE: New Books: Formulary and Therapeutic Guide (New York Hospital) *Hosp. Progress* 33:66 (Aug.) 1952.

487 MARTIN, J. D.: Standard Formulary, *Modern Hosp.* 78:100 (May) 1952.

488 BROWN, G. B.: A Simplified Drug Formulary, *Hosp. Pharm.* (Canada) 5:79 (Mar.-Apr.) 1952.

489 ANON.: Hospital Drug Lists (Editorial), *Drug Trade News* 27:42 (Feb. 18) 1952.

---

490 WALLACE, K.: Research in Purchasing, *South Hosp.* 19:69 (Dec.) 1951.

491 ANON.: What Price Medical Science, *Hosp. Progress* 32:340 (Nov.) 1951.

492 ANON.: Veterans Administration Formulary, *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:734 (Nov.) 1951.

493 VANDERWARKER, R., *et al.*: A Formulary Would Help in Purchasing Drugs (Round Table Discussion), *Modern Hosp.* 77:81 (July) 1951.

494 ANON.: N. J. Hospital Saves $100,000 Through Pharmacist Members of Drug Committee, *Drug Topics* 95:13 (July 16) 1951.

495 ANON.: N. J. Doctors Advocate Prescription Men for Hospitals, *Drug Topics* 95:6 (June 18) 1951.

496 ANON.: Economy in Medication (Editorial) *Hosp. Pharm.* (Canada) 4:133 (May-June) 1951.

497 KINNANE, T. E.: Application of Formulary to Small Hospital, *Hosp. Management* 71:105 (May) 1951.

498 HAWKES, R. S.: Preparation and Use of the Hospital Formulary, *Hosp. Management* 71:80 (Apr.) 1951.

499 ANON.: An Aid in Organizing the Pharmacy Committee Agenda, *Am. Profess. Pharmacist* 17:261 (Mar.) 1951.

500 ANON.: New Jersey Hospital Names Ziff, Granito, as Consultants, *Drug Topics* 95:36 (Feb. 26) 1951.

501 STATIA, P.: The Hospital Formulary, *Hosp. Pharm.* (Canada) 4:25 (Jan.-Feb.) 1951.

PROFESSIONAL RELATIONS

502 VANCE, J.: Fellow Druggists, *South. Hosp.* 20:46 (Dec.) 1952.

503 ANON.: Fills Prescriptions Hospital Pharmacy Can't Handle, *Am. Druggist* 126:52 (Dec. 8) 1952.

504 MORGAN, D. M.: Coordination of Nursing and Pharmacy Departments, *Bull. Am. Soc. Hosp. Pharm.* 9:575 (Nov.-Dec.) 1952.

505 ANON.: Prescription Men Supply Hospital M.D.s with Information, *Drug Topics* 96:40 (Sept. 22) 1952.

506 WREN, G. R.: The Administrator Looks for Cooperation from the Pharmacist, *Am. Profess. Pharmacist* 18:716 (Aug.) 1952.

507 TOBIN, D. E.: Pharmacy Operation Brochure for Nurses, *Hosp. Management* 73:83 (June) 1952.

508 PARKER, P.: The Pharmacist and the Hospital Team, *Am. Profess. Pharmacist* 18:534 (June) 1952.

509 BJERKE, P. G.: Increasing Professional Service, *Bull. Am. Soc. Hosp. Pharm.* 9:192 (May-June) 1952.

510 BURR, C. W.: Hospital Pharmacy: Its Opportunities and Responsibilities to Retail Pharmacy, *Western Druggist* (Canada) 20:50 (May) 1952.

511 HOLLAND, M. O.: Recognition (Editorial), *Am. Profess. Pharmacist* 18:323 (Apr.) 1952.

512 HOLLAND, M. O.: Pharmacy Bulletins Promote Good Will and Sales, *Pharm. International* 6:11 (Apr.) 1952.

513 ANON.: Retail and Hospital Pharmacists Talk Things Over, *Am. Profess. Pharmacist* 18:254 (Mar.) 1952.

514 SCHNEIDER, A.: Professional Services the Pharmacist Can Render the Medical Staff, *South. Hosp.* 20:62 (Feb.) 1952.

515 BUCK, F. D.: The Hospital Pharmacist—An Aid to Interns and Nurses, *Hosp. Pharm.* (Canada) 5:31 (Jan.-Feb.) 1952.

---

516 COLINA, G.: The Pharmacist and the Hospital Staff, *South. Hosp.* 19:61 (Dec.) 1951.

517 THISTLETHWAITE, F. H.: Pharmacy at the Highest Level—Hospital Pharmacy, *Hosp. Pharm.* (Canada) 4:300 (Nov.-Dec.) 1951.

518 LAGEN, J. B.: The Value of the Hospital Pharmacist, *Bull. Am. Soc. Hosp. Pharm.* 8:387 (Sept.-Oct.) 1951 *or Hosp. Pharm.* (Canada) 4:249 (Sept.-Oct.) 1951. Reprinted from publication of the Northern California Society of Hospital Pharmacists.

519 ANON.: Sees Hospital Outpatient Prescription Services As Hurting Economic Life of Druggist, *Drug Topics* 95:3 (Aug. 27) 1951.

520 SISTER MARY LAURISSA: The Role of the Pharmacist in Staff Education, *Hosp. Progress* 32:255 (Aug.) 1951.

521 SISTER MARY JUNILLA: The Pharmacist as an Ally of the Medical Service, *Hosp. Pharm.* (Canada) 4:208 (July-Aug.) 1951.

522 FERGUSON, D. L.: The Pharmacist in the Medical Team, *South. Hosp.* 19:47 (July) 1951.

523 HOLLAND, M. O.: Professional Bulletins for Pharmacists, *Am. Profess. Pharmacist* 17:531 (June) 1951.

524 FRANCKE, D. E.: Our Opportunities for Increased Professionalism, *Bull. Am. Soc. Hosp. Pharm.* 8:89 (Mar.-Apr.) 1951.

525 WOLFE, E.: Greeting and Invitation Card, *Bull. Am. Soc. Hosp. Pharm.* 8:140 (Mar.-Apr.) 1951.

526 FLACK, H. L.: The Hospital Pharmacist Views Administration, *Pharm. International* 5:12 (Feb.) 1951.

527 ANON.: A Score for Professional Relations, *Am. Profess. Pharmacist,* 17:156 (Feb.) 1951.

528 ZOPF, L. C.: Relationship with Hospitals and Nurses, *Am. J. Pharm. Ed.* 4:80 (Jan.) 1940.

PUBLIC HEALTH AND MEDICAL CARE

529 ANON.: Doubtful Economy (Editorial), *Drug Trade News* 27:32 (Nov. 24) 1952.

530 ANON.: Plan for Prepaid Medical Care Via Private Clinics is Unveiled, *Am. Druggist* 126:11 (Nov.) 1952.

531 VANCE, J.: Blue Cross Interested in Drug Costs, *South Hosp.* 20:58 (Apr.) 1952.

532 ANON.: Medical Care Expenditures (Editorial Comment), *Am. Profess. Pharmacist* 17:1087 (Dec.) 1951.

533 VANCE, J.: Reply to Mr. Fischl (*Drug Topics,* Aug. 27, 1951) *South. Hosp.* 19:67 (Oct.) 1951.

534 VANCE, J.: Blue Cross and the Patient's Drug Bill, *South. Hosp.* 19:50 (Apr.) 1951.

PUBLIC RELATIONS

535 BECK, A. V. R.: Report of Committee on Program and Public Relations, *Bull. Am. Soc. Hosp. Pharm.* 9:483 (Sept.-Oct.) 1952.

536 SLABODNICK, W.: Report of Committee on Program and Public Relations, *Bull. Am. Soc. Hosp. Pharm.* 8:321 (Sept.-Oct.) 1951.

537 PHILLIPS, N. W.: The Trend Toward Achievement of a Pharmacy Goal: . . . Professional Recognition, *Hosp. Management* 72:100 (Sept.) 1951.

RESEARCH

538 LAWRENCE, C. A.; LINDERHOLM, B. E.; and BEPPLER, W.: Methods for Appraisal of Antiseptic Properties of Chemical Disinfectants with Special Reference to Bactine, *Bull. Am. Soc. Hosp. Pharm.* 9:600 (Nov.-Dec.) 1952.

539 SHAY, D. E. and JOSEPH, J. M.: A Study of Bacterial Types Found in Anesthetizing Apparatus, *Bull. Am. Soc. Hosp. Pharm.* 9:34 (Jan.-Feb.) 1952.

540 WALLACE, K.: Research in Purchasing, *South. Hosp.* 19:69 (Dec.) 1951.

541 PURDUM, W. A.: Research and Graduate Instruction for Hospital Pharmacists, *Am. J. Pharm. Ed.* 14:216 (Jan.) 1950.

SMALL HOSPITALS

542 VANCE, J.: The Retail Pharmacists' Responsibility to the Small Hospital, *South. Hosp.* 20:62 (Nov.) 1952.

543 MORRIS, E.: Retail Pharmacies Can Provide Service to Hospitals, *Am. Profess. Pharmacist* 18:808 (Sept.) 1952.

544 MORGAN, M. E.: A Modern Pharmacy for a Small Hospital, *Bull. Am. Soc. Hosp. Pharm.* 9:188 (May-June) 1952.

545 JARRETT, W. A.: Hospital Pharmacy and the March of Time, *Hosp. Progress* 33:82 (Jan.) 1952.

546 COLINA, G.: The Pharmacist and the Hospital Staff, *South. Hosp.* 19:61 (Dec.) 1951.

547 ANON.: Pharmacy Section is Termed Nonessential for Small Hospitals, *Drug Topics* 95:3 (Sept. 10) 1951.

548 MAUZY, W. L.: A System of Control and Billing for the Drug Store Pharmacy, *Hospitals* 25:60 (Aug.) 1951.

549 JEFFRIES, S. B.: Pharmacies Can Supplement Income by Serving Hospitals and Clinics, *Pharm. International* 5:38 (July) 1951.

550 JONES, J. H.: Constructive Criticism of the Hospital Pharmacy, *Hospitals* 25:43 (May) 1951.

551 KINNANE, T. E.: Application of Formulary to Small Hospital, *Hosp. Management* 71:104 (May) 1951.

552 SISTER MARIAN: The One-Man Pharmacy, *Hosp. Progress* 32:158 (May) 1951.

553 ANON.: Calif. Hospital Warned It Must Employ Prescription Man, *Drug Topics* 95:16 (Apr. 9) 1951.

554 ANON.: New York Kills Bill for Prescription Men in Hospitals, *Drug Topics* 95:16 (Mar. 26) 1951.

555 SISTER M. ANCILLA: Manufacture or Buy? *Hosp. Progress* 32:90 (Mar.) 1951.

556 ATKINS, K. K.: A Narcotic Control System for Use in the Small Hospital, *Hospitals* 25:95 (Feb.) 1951.

STANDARDS AND STANDARDIZATION

See also Pharmacy and Therapeutics Committee

557 ARCHAMBAULT, G. F.: Practical Applications of Minimum Standards (in 3 parts), *Hosp. Progress* 33:90 (Oct.) 33:80 (Nov.); and 33:84 (Dec.) 1952.

558 ANON.: A Case for Hospital Pharmacy Inspections, *Am. Profess. Pharmacist* 18:1003 (Nov.) 1952.

559 BOWLES, G. C.: Report of Committee on Minimum Standards, *Bull. Am. Soc. Hosp. Pharm.* 9:482 (Sept.-Oct.) 1952.

560 KNEIFL, M. R.: Advancement of Pharmacy Services in Catholic Hospitals, *Bull. Am. Soc. Hosp. Pharm.* 9:251 (July-Aug.) 1952.

561 NIEMEYER, G.; BERMAN, A.; and FRANCKE, D. E.: Ten Years of the ASHP (Standards), *Bull. Am. Soc. Hosp. Pharm.* 9:341 (July-Aug.) 1952.

562 SISTER MARY BERNARDINE: Focusing Minimum Standards, *Hosp. Progress,* 33:76 (Apr.) 1952.

563 SISTER M. ETHELDREDA: Report of Committee on Minimum Standards, *Bull. Am. Soc. Hosp. Pharm.* 8:319 (Sept.-Oct.) 1951.

564 ANON.: Minimum Standards for Pharmacies in Hospitals, *Pharm. International* 5:65 (Sept.) 1951.

565 FRANCKE, D. E.: Significance of Standards to Boards of Pharmacy (Editorial), *Bull. Am. Soc. Hosp. Pharm.* 8:223 (July-Aug.) 1951.

566 SISTER M. ETHELDREDA: What Minimum Standards Mean to the Hospital Pharmacy, *Hospitals* 25:64 (July) 1951.

567 SISTER MARY BERNARDINE: Minimum or Minus, *Hosp. Progress* 32:189 (June) 1951.

568 FISCHELIS, R. P.: Pharmacy's Contribution to Adequate Standards, *South Hosp.* 19:62 (May) 1951.

569 ARCHAMBAULT, G. F.: Standards for Prescription Containers, *Bull. Am. Soc. Hosp. Pharm.* 8:108 (Mar.-Apr.) 1951.

570 PURDUM, W. A.: Minimum Standards and the Future, *Bull. Am. Soc. Hosp. Pharm.* 8:114 (Mar.-(Apr.) 1951.

571 ANON.: Minimum Standards for Pharmacies in Hospitals (Editorial), *J. Am. Med. Assoc.* 145:565 (Feb. 24) 1951. Reprinted in *Bull. Am. Soc. Hosp. Pharm.* 8:117 (Mar.-Apr.) 1951, and in *J. Am. Pharm. Assoc., Pract. Pharm. Ed.* 12:152 (Mar.) 1951.

572 MACEACHERN, M. T.: MacEachern's Mailbag, *Hosp. Management* 71:28 (Jan.) 1951.

STATISTICS AND SURVEYS

573 ANON.: Survey Planned on Drugs in Hospitals, *Am. Druggist* 126:14 (Oct. 27) 1952.

574 VANCE, J.: Charges Survey of Member Hospitals of Texas Hospital Association, *South. Hosp.* 20:52 (Aug.) 1952.

575 CATHOLIC HOSPITAL ASSOCIATION: Pharmacy Service, *Hosp. Progress* (Directory Number) 33:71 (part I) (May) 1952.

576 NATIONAL ASSOCIATION OF BOARDS OF PHARMACY: NABP Census Shows 6,711 New Pharmacists and 1,987 Hospital Pharmacists during 1950, *Drug Topics* 96:16 (Jan. 28) 1952.

577 VANCE, J.: Survey on Drug Charges, *South Hosp.* 19:61 (Dec.) 1951.

578 MIYA, M. and DEKAY, H. G.: A Survey of Bulk Compounding in Hospital Pharmacies, *Am. Profess. Pharmacist* 17:644 (July) 1951.

579 VANCE, J.: Salary Poll, *South. Hosp.* 19:51 (June) 1951.

580 ANON. Numerical Summary of Replies by New England Hospitals to Pharmacy Questionnaire of November, 1950, *Hosp. Management* 71:82 (Apr.) 1951.

TEACHING ACTIVITIES

581 LICHTIN, A.: Medication Technic and the Graduate Medical Student, *Am. J. Pharm.* 124:312 (Sept.) 1952.

582 BUCK, F. D.: The Hospital Pharmacist—An Aid to Internes and Nurses, *Hosp. Pharm.* (Canada) 5:31 (Jan.-Feb.) 1952.

583 SWAIN, R. L.: It Looks Like Criminal Negligence to Me, *Drug Topics* 96:20 (Jan. 28) 1952.

584 ZUGICH, J. J.; MILLER, J.; HANSEN, H. S.; MCCLUSKEY, D. O.; and FRANCKE, D. E.: Tentative Draft of an Outline for Teaching Students in Hospital Administration—The Pharmacy Department, *Bull. Am. Soc. Hosp. Pharm.* 8:357 (Sept.-Oct.) 1951.

WARTIME ACTIVITIES AND CIVIL DEFENSE

585 SLABODNICK W.: Report of Committee on Disaster Preparedness, *Bull. Am. Soc. Hosp. Pharm.* 9:489 (Sept.-Oct.) 1952.

586 FOSTER, T.: Pharmaceutical Production and Supply During the Emergency Period, *South. Hosp.* 19:59 (Nov.) 1951.

587 PESA, L.: Report of Committee on Civilian Defense, *Bull. Am. Soc. Hosp. Pharm.* 8:331 (Sept.-Oct.) 1951.

588 SISTER MARY LAURISSA: The Role of the Pharmacist in Staff Education, *Hosp. Progress* 32:255 (Aug.) 1951.

589 FOSTER, T. A.: Civilian Health Requirements, *Bull. Am. Soc. Hosp. Pharm.* 8:241 (July-Aug.) 1951.

590 PICCOLI, L. J.: The Pharmacist and Civil Defense, *Am. Profess. Pharmacist* 17:337 (Apr.) 1951.

591 ANON.: Wants All to Visit Hospital Prescription Rooms, *Drug Topics* 95:3 (Feb. 26) 1951.

592 ANON.: Prescription Men to Work in Hospitals if Enemy Drops Atom Bomb, *Drug Topics* 95:18 (Feb. 26) 1951.

593 ANON.: Civil Defense As It Concerns Hospital Pharmacists, *Bull. Am. Soc. Hosp. Pharm.* 8:67 (Jan.-Feb.) 1951.

GENERAL

594 VANCE, J.: The Administrator Views Present-Day Challenge to Hospital Pharmacy, *Hosp. Management* 74:78 (Dec.) 1952.

595 ANON.: Fills Prescriptions Hospital Pharmacy Can't Handle, *Am. Druggist* 126:52 (Dec. 8) 1952.

596 LAWRENCE, C. A.; LINDERHOLM, B. E.; and BEPPLER, W.: Methods for Appraisal of Antiseptic Properties of Chemical Disinfectants with Special Reference to Bactine, *Bull. Am. Soc. Hosp. Pharm.* 9:600 (Nov.-Dec.) 1952.

597 ANON.: Hospital Pharmacy: It is a Unique Branch of a Great Profession, *The Johns Hopkins Magazine* 4:12 (Oct.) 1952.

598 COOPER, P.: Reflections of the Moral Responsibilities of a Public Pharmacist, *Hosp. Pharm.* (Canada) 5:248 (Sept.-Oct.) 1952.

599 YORKE, E. J.: Has Professionalism in Pharmacy Developed in the Last Century? *Am. J. Pharm.* 124:307 (Sept) 1952.

600 LETOURNEAU, C. U.: Boric Acid—Poisonous Chemical and Doubtful Antiseptic, *Hospitals* 26:82 (July) 1952.

601 SISTER ELIZABETH JOSEPH: Spiritualizing Pharmacy Service, *Hosp. Progress* (Canada) 33:80 (June) 1952.

602 TABERN, D. L.; GLEASON, G. I.; and LEITNER, R. G.: Radioisotopes, Uses and Procurement, *Am. Profess. Pharmacist* 18:523 (June) 1952.

603 ANON.: Razor-Sharp Accuracy Byword of Ohio Hospital Pharmacy, *Drug Topics* 96:24 (Mar. 10) 1952.

604 HANSEN, H. S.: Work by the Side of Work, *Bull. Am. Soc. Hosp. Pharm.* 9:31 (Jan.-Feb.) 1952.

605 ANON.: Hospital Pharmacy Called Grown Up, *Drug Topics* 95:4 (Dec. 3) 1951.

606 FEE, J. B.: Practical Spirituality for Pharmacists, *Hosp. Progress* 32:46A (Dec.) 1951.

607 SISTER MARY CARL: Advancement Always Takes Effort, *Hosp. Progress* 32:353 (Nov.) 1951.

608 ANON.: Pharmacy As a Way of Life, *Am. Profess. Pharmacist* 17:1022 (Nov.) 1951.

609 CHRISTIAN, J. E.: The Radioisotope Program in the Hospital, *Pharm. International* 5:40 (Aug.) 1951.

610 LAWRENCE, C. A. and GROVER, A. A.: Hospital Sterilizing Solutions, *Bull. Am. Soc. Hosp. Pharm.* 8:224 (July-Aug.) 1951.

611 FREDERICK, D.: Your Job—A Challenge or a Livelyhood? *Hosp. Pharm.* (Canada) 20:149 (May-June) 1951.

612 KEATS, T. E.: Roentgenologic Contrast Media, *Bull. Am. Soc. Hosp. Pharm.* 8:158 (May-June) 1951.

613 CATHCART, J. R.: Three Ways Hospital Pharmacy Can Serve the Hospital (Report on Paper), *Hosp. Management* 71:104 (May) 1951.

614 JONES, J. H.: Nine Ways Hospitals Can Improve Pharmacy Services and Practices (Report on Paper), *Hosp. Management* 71:102 (May) 1951.

615 JONES, J. H.: Constructive Criticism of the Hospital Pharmacy, *Hospitals* 25:43 (May) 1951.

616 SISTER MARY CARL: Lanes to Heaven, *Hosp. Progress* 32:111 (Apr.) 1951.

617 STATIA, P.: Some Common Stains and Suggestions for Their Removal, *Hosp. Pharm.* (Canada) 4:83 (Mar.-Apr.) 1951.

618 *ANON.*: Duties of the Hospital Pharmacist, *Hosp. Pharm.* (Canada) 4:95 (Mar.-Apr.) 1951. Reprinted from *Revue de Pharmacie* (Montreal), (Oct.) 1950.

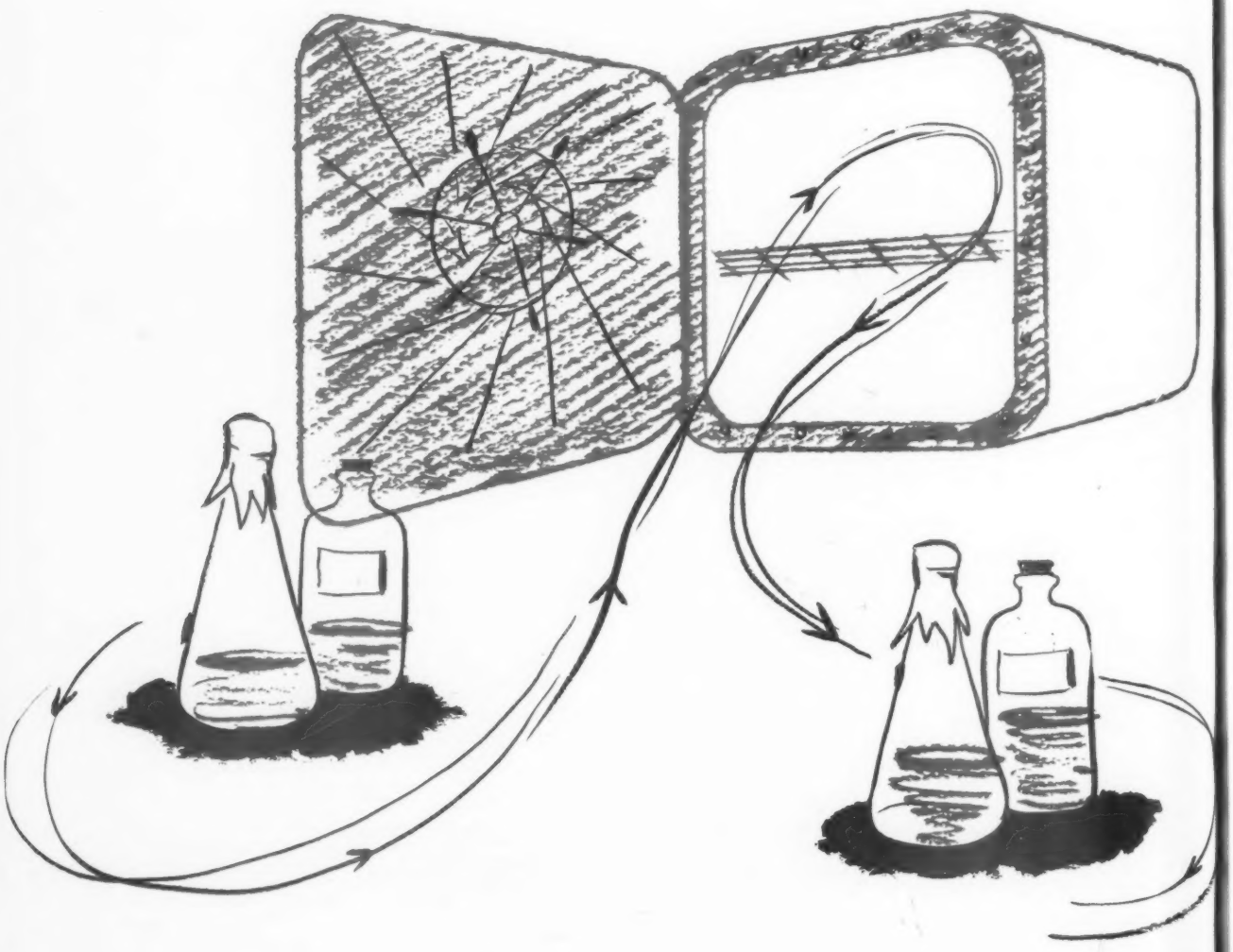
619 ZOPF, L. C.: Hospital Pharmacy Moves Forward (Editorial) *Am. J. Pharm. Ed.* 4:128 (Jan.) 1940.

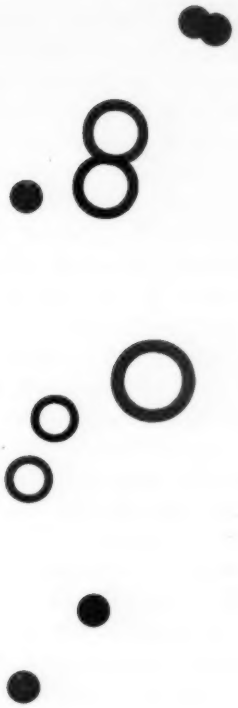
620 ZOPF, L. C.: Hospital Pharmacy, *Am. J. Pharm. Ed.* 1:155 (Apr.) 1937.

AUTHOR INDEX

by SISTER MARY FLORENTINE

STERILIZATION





STERILIZATION as it is known and used today has made rapid advances since Pasteur first demonstrated bacteriologically that heat destroyed organisms and described the use of boiling water and dry heat at 120° - 130° C. as effective sterilizing agents. One of the first steam sterilizers, designed for Pasteur in 1876 by Louis Championniere, was subsequently used by him in his surgical practice. Koch and Loeffler investigated sterilization by dry heat and flowing steam. These tools were important bacteriologically and many of the salient points were utilized in various scattered locations, but only in the last twenty years have all the principles been applied consistently.

Sterilization vs Disinfection

Sterilization and disinfection are terms which we use quite loosely and interchangeably. "Sterilization is the process of freeing from germ life, and differs from disinfection in that it calls for the destruction of all bacterial life, while disinfection is not necessarily the destruction of all bacteria, but only those that are infectious." Thus, the most important word in the definition is "all"—the destruction of all bacterial life. It is this one small word that complicates the problem of sterilization, especially of pharmaceuticals. Bacteria are living cells, as are molds, and virus, and other invisible but ever present contaminants of pharmaceuticals. Like all living cells they react to changes in the physical components of their environment. By the action of these various physical forces upon them, they may be killed, stimulated, attenuated, or caused to produce variants. No two act the same and a thorough knowledge of the organism to be removed as well as the agent to be used is of the utmost importance

Agents

Heat is the most widely used, the oldest, and certainly the most dependable of all the physical agents available, but heat as a sterilizing agent is dependent on time, intensity and penetration. Bacteria may be killed by both low and high temperature depending on the species, the growth stage, and the presence or absence of endospores. Low temperatures are much less destructive than high ones; unless the freezing process brings about rupture of the cell, there is merely suspended animation. The mechanism of the destructive action of heat is little understood. Some workers believe it is based on enzyme destruction either in the organism or the medium in which it grows; others that it is caused by heat denaturation of the protein within the cell. Even slight variations in *p*H affect the killing time which is greater in the

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acid range, less in the alkaline. Penetration probably accounts for the difference in time required to sterilize in dry hot air, hot water, and steam. Dry heat takes longest; anthrax spores which are destroyed by boiling water at 100° C. in 5 minutes require 3 hours in an oven at 140° C. This is possibly explained by dehydration rather than coagulation of the protein with the final destruction occurring by actual burning.

Moist heat is most effective because it is penetrating and also because condensation takes place with liberation of heat when steam comes in contact with the objects to be disinfected. In water vapor at 100° C. this heat is 540 calories per gram. Boiling water will destroy ordinary forms of bacterial life within five minutes, but spores require two hours. (*B. subtilis* withstands heating at 320° for 45 minutes, and since *B. subtilis* is one of the aerial contaminants producing pyrogen, this killing time is of especial interest.) Live steam is most practical; flowing, it has a more or less constant temperature of 100° C. depending on the pressure. When the pressure is increased, temperatures far in excess may be reached. Steam, even under pressure, must be saturated. When it is superheated, it becomes dry and will have less disinfecting power at 125° C. than live steam at 100° C.; however in this situation it now becomes effective as dry heat. However, saturated steam under pressure is the most powerful method of sterilization in general use. Steam at 15 lbs. pressure for 15-20 minutes, is sufficient to kill all forms of bacteria including spores.

Sterilization Of Pharmaceuticals

The problems of sterilization of pharmaceuticals differ greatly from those encountered for dressings, where heating occurs by circulation of steam through the bundle rather than actual penetration. Total exposure to heat rather than actual penetration is the problem here, for it is heat which poses many of the difficulties with thermal-sensitive materials. The U.S.P. XIII directs—"When sterilization of injections can be effected by Process C or Process F without decomposing or otherwise changing the injection so treated, these processes are to be used." This is of even greater interest when we note that U.S.P. XIV has dropped the chapter on Sterilization. The main concern, then, in connection with the sterilization of pharmaceuticals, which are usually in the form of solutions, is to make sure that the material is subjected to the proper temperature to insure sterilization and for a sufficient length of time so that the entire contents are exposed for this period. In a properly functioning autoclave, the variables introduced are the quantity and nature of the liquid to be heated and the nature of the container holding this liquid. In the light of more recent findings it is felt that the exposure periods formerly believed adequate are not long enough. The only way to be sure of uniform heating is to test various batches with a thermocouple. Since most hospitals are not equipped with potentiometers, reliance must be placed on the manufacturers of sterilizing equipment, who maintain laboratories and can help to set up accurate time-temperature periods for individual cases.

The presence of air in an autoclave or in equipment, placed in it for sterilization, retards or prevents efficient performance in several ways. First, air-steam mixtures do not develop the temperatures characteristic of saturated steam under the same pressure; hence, killing power is decreased. This fact is generally accepted in this country, and sterilization procedures are based on it. However, it is interesting to note that Savage reports that there is no difference between the sterilizing action of pure steam and that of air-steam mixture. His experiments were carried out in 2 ml. ampuls filled with dry earth and a drop of water. The sealed ampuls were heated in an oil bath and became, in effect, a miniature autoclave, the presence of water giving the saturated atmosphere. Secondly, air stratification interferes with efficient performance. This is actually no problem in a properly constructed autoclave since air is more dense than steam and stratifies below it and will flow from the bottom outlet by gravity. Utensils from which water would flow are in proper position for air to flow also.

Dry Heat Sterilization

Dry heat sterilization is indicated where steam penetration would not be feasible, or where prolonged exposure to heat will not decompose the materials to be sterilized. Many materials used in hospitals are of their very nature, impervious to steam penetration: oils, waxes, talcum powder, and many solid chemicals such as sulfonamide powders must be sterilized by dry heat. This process has many limitations since heating takes place more slowly. There is a great time lag, especially in oils and greases, in bringing the material up to the necessary temperature. It takes 70 minutes to penetrate 30 cc of petroleum jelly and 160 additional minutes to destroy spores in the gauze.

The best type of hot air sterilizer is an electrically heated one with forced air circulation to

insure uniform conditions throughout. Lacking this, a dressing sterilizer may be used as a dry heat sterilizer by inserting a thermometer in the jacket return line to indicate accurately the temperature of the jacket. When the steam pressure is 775 mm the chamber walls will be uniformly heated to 121°C. and with the door closed conditions are ideal for dry heat sterilization. If the load is exposed all night, sterilization can be considered reliable.

Direct Flame

The main points to be considered in hot air sterilization are sufficient exposure and penetration, the latter being assured by having the materials in small containers. Another method of heat sterilization is incineration or charring, familiar to all who have done bacteriological work. Here the bacteria are actually burned by exposure to the Bunsen flame for a period of twenty seconds.

Radiation

Several other physical agents that act upon bacteria are of academic interest since much investigational work is being done with some of them in industry. At the present time none of them is practical for hospital use. The ones which have been tried are radiation, such as electromagnetic, light, x-rays and radium. Electricity, where passage of electric current carries bacteria to the positive pole, has been tried in the sterilization of milk. Pressure: mechanical, osmotic and gaseous, are not satisfactory since mechanical pressures up to 3,000 atmospheres will not kill; the osmotic pressure probably causes rupture of the cell. Agitation and trituration methods, where action is dependent on the disruption of the cell, are used in the preparation of vaccines. High frequency sound waves have also been utilized in the sterilization of milk.

Cathode Rays

Sterilization of a wide variety of pharmaceuticals after the final packaging by means of high-voltage cathode rays has been developed by Massachusetts Institute of Technology. "It is clear that the sterility of many heat-sensitive pharmaceutical products can be assured on a practical and economical basis by irradiation with high-energy x-rays" says Dr. James P. Killian Jr., president of M.I.T. Three million volt cathode rays, similar to x-rays, but more penetrating, are produced in an electrostatic generator. Dr. John G. Trump, associate professor of electrical engineering, reports that penicillin, streptomycin, heparin, surgical sutures, and many other substances can be sterilized in their final sealed glass containers without detectable adverse effect on potency or other properties. "The amount of cathode-ray energy which will completely sterilize all bacterial and virus contaminants raises the temperature of the pharmaceutical less than 8°." However, this method is too costly; an installation would cost from 75—100,000 dollars.

Electrons

The development of Van de Graff electron accelerators for use in high-voltage, electron-beam sterilization of foods, pharmaceuticals, medicinal and sanitary products has been announced and is being used in several large pharmaceutical plants. Intense beams of high-energy electrons are produced by the high potentials generated within the accelerator. The electron beam is produced within a sealed pressurized chamber from which it emerges through a thin aluminum window. The passage of the high-energy electrons through the material upsets the electrostatic balances of the atoms or molecules, ionizing them so that their chemical relationships are momentarily altered. When this dislocation takes place in a living organism it is fatal. The treatment required for complete sterility depends on the nature of the organisms present. It is maintained that the toughest known microorganisms are wiped out by a dose within the economic range of available equipment. No significant amount of heat is generated, so that sterile containers can be used that withstand only the normal stresses of handling and storage. Plastics, fibre containers, thin foils, or metal cans are permeable to the electron beams and the properties and appearance of these packaging materials are unaffected by the process. Thin walled glass vials may be used, although the electron beam darkens the glass slightly according to the intensity of the radiation, but this may be overcome by minor changes in the composition of the glass.

Fission Products

The pharmaceutical industry is beginning to use fission products, the first being the sterilization of penicillin by *gamma* rays. During the spring, Atomic Energy Commission and Food and Drug Administration representatives met in Washington to discuss this possibility. Stanford Research Institute may go ahead with a thorough study. Stanford will use a 5000-curie cobalt-60 source to produce *gamma* rays for the study, but selected fission products will be more economical in actual process. Heat sensitive penicillin cannot be sterilized at high temperatures and "cold" process using

gamma rays will offer technical and, possibly, cost advantages. Stanford will compare costs of producing *gamma* rays from machines and fission products with cost of present practice, which runs about $5 million a year.

Ethylene Oxide

Gas sterilization seems to be the most practical of the new methods. At the present time the cost is much higher than steam, being from twelve to twenty cents per cycle, exclusive of the original cost of the equipment, but the industry is working hard to bring this within more reasonable hospital limits. The method utilizes ethylene oxide gas, which, because of its toxicity and explosive hazards is not used in its pure form but as carboxide, which is a mixture of 1 part ethylene oxide and 9 parts carbon dioxide in liquid form. This mixture is likewise irritant to mucous membranes and toxic in high concentrations. The Army Medical Corps has been testing it at Camp Dietrich and have found that if used properly it will kill any resistant forms of bacteria, fungus and rickettsiae. It is believed that the problem is merely a mechanical one of maintaining adequate gas pressure in the chamber. When this is overcome it will be quite practical in the pharmaceutical field although its greatest value will be in the sterilization of heat sensitive material and supplies, such as bronchoscopes and cystoscopes, catheters and rubber goods and plastic disposable infusion sets.

Aseptic Procedures

Bacterial filtration and aseptic technic are in order wherever the nature of the solution to be sterilized precludes other methods. Filters for this process are made of various materials: porcelain, sintered glass, diatomaceous earth, and asbestos and are furnished in various porosities. They all require either pressure or vacuum for operation. Porcelain candles, such as Selas, may be cleansed of all organic matter by heating in a muffle furnace and give cleaner filtrates than the diatomaceous earth filters. Sintered glass filters are available in varying porosities and are desirable because they do not have fibres to contaminate as the asbestos pads of Seitz filters do. The pyrogen retentive filter pad used in Ertel filters have a built-in stone fibre eliminator which increases their efficiency. In using any of these filters, care must be used to maintain aseptic precautions throughout. All utensils, containers, stoppers or other closure must be sterilized and rigid surgical asepsis maintained. The room should be such that air contamination can be minimized; air filters and ultraviolet light are helpful.

Preservatives

When multiple dose containers are used it is desirable to add a preservative as an additional safeguard. In this connection it may be of interest to note that most formulas recommend the use of 0.5 per cent chlorobutanol as a preservative. In a personal communication from Merck and Co., the use of 0.35 per cent chlorobutanol hydrous when the *p*H of the solution is seven or below, is suggested. Generally, when 0.5 per cent chlorobutanol is used as a bacteriostic agent, part of it is removed by filtration as this amount is not freely soluble. Furthermore the high temperature required to dissolve this larger quantity initiates decomposition with the final formation of traces of hydrochloric acid which cause a definite lowering of the *p*H in many instances. The quantity suggested, 0.35 per cent chlorobutanol hydrous (or 0.33 per cent chlorobutanol anhydrous) readily dissolves in water at 60° C.

Ultraviolet Light

The large commercial houses have elaborate developments of aseptic technic with ultraviolet light to kill air borne bacteria, filtered air and special sterile garments. The average hospital pharmacy need only carry out an aseptic technic in line with that used in the surgeries, although filtered air and ultraviolet lights are added precautions.

Autoclave Construction

The autoclave, which is the piece of equipment used for sterilization under pressure, is simply an air-tight vessel in which steam can be generated under pressure. The pressure cooker used in home canning is a familiar example and may be used as a small sterilizer. Those in use in hospitals are of two basic types, single-wall and double-wall, the latter predominating, since the drying of packs, dressings, and the like is essential. They may be heated directly by steam, or by steam generated in a boiler by the application of heat; either by gas, or by electricity. The indirect method requires a longer time because of the lag in bringing the water in the boiler up to steam. The single-wall or laboratory type autoclave is preferable for pharmaceuticals and heat sensitive materials, but the same effect can be obtained by turning off the jacket heat at the end of the sterilizing period and allowing both chamber and jacket to return to atmospheric pressure together. This not only hastens the cooling process, but allows the fluid to cool without violent ebullition due to sudden pressure changes. Industry uses several methods

to speed up the process. Compressed air cooling in which air at a pressure one to two pounds higher than that of steam is introduced into the chamber, allows the chamber to come to atmospheric pressure rapidly. The jacket may be water-cooled, thus hastening the process. Also, sterile nitrogen is sometimes introduced to equalize the steam pressures. Again, these are more of academic than practical interest to a hospital pharmacist.

There are many manufacturers of equipment of this sort, some more widely known than others. In general, it is best to obtain equipment from the nearest source of supply with consideration for the problems of maintenance and service. It is also well to bear in mind the load to be placed on the particular piece of equipment, and, if at all possible, to get one larger than needed since most of us find our work load increasing rather than standing still.

Maintenance

The problem of maintenance cannot be overstressed. Human lives are dependent upon the proper functioning of sterilizers. A whole solution program can be thrown out because of a reaction or even more serious happening due solely to a faulty thermometer or clogged drain line giving improper sterilizer performance. Dr. Walter has a chapter on "Maintenance of Sterilizing Equipment" which should be helpful even to the least mechanically minded. Many of the manufacturers have service contracts which help to keep their equipment in tip-top working order. However, your own hospital maintenance departments are the ones who must make immediate repairs as well as periodic inspections and checks. Above all keep the equipment clean, check the exhaust line screen daily, treat the door gasket with respect and it will repay you in added life.

Recording Devices

The various recording devices are designed as a safety measure in checking on predetermined exposure periods, especially where equipment is operated by non-professional employees. They act as a written record of every load run, but as a safeguard only if the time-temperature relationships set up are used as a standard. The usual recording thermometers give a written record of the temperatures in the exhaust line, and most modern equipment comes with the device as an integral part. A more sensitive control is provided by the recording potentiometer activated by thermocouples within the load. It gives a written record of what happened within the material being sterilized, but is too expensive for the average hospital. Other controls, Diack, Steam Clox, etc., depend upon temperature changes and are used as a measure of sterility, but checks have proved them to be far from infallible. A new idea in the field is being studied by the Army Quartermaster Corps: Paper thermometers capable of instantly determining temperatures from 115° to 500° F. initially designed to ascertain the thermal radiation of atomic blasts, will be put to other uses. These thermometers consist of white pigment coatings on black paper, each coating designed to melt at a definite temperature. When one of the indicators is heated to its designated temperature, the white coating melts and disappears into the black process paper revealing the black background. The change from black to white is not reversable and therefore constitutes a permanent record of the indicated temperature. These paper thermometers are not as yet commercially produced, but will probably cost only a few cents each. Inquiries may be addressed to the Office of the Quartermaster General, Washington 21, D.C.

Recording thermometers are the most widely used and most practical devices. They are clock driven, and since they are coupled with the thermometer in the discharge line, give an accurate permanent record of the performance of the equipment. Care should be taken to check the temperatures on the chart with the thermometer in the discharge line, setting the pen if necessary to coincide, since the recording arms are easily distorted. Charts are an adequate check for the supervisor upon the work of subordinates and act in turn as the employee's record that an adequate performance was obtained.

The problem of sterilizing pharmaceuticals is becoming increasingly important as more and more potent chemicals become weapons in man's eternal battle against disease. Since sterile, accurately measured, injectible forms make possible a safer method of administering such potent drugs, the field is ever-widening. It is a complex field and is becoming more so as science continues its progress.

Having reviewed present theory and touched briefly on forecasts for the future it seems as though the problem has become more involved instead of being clarified. When Our Lord cured a blind man, He asked him if he could see anything and received the reply, "I can see men as if they were trees walking", and the scriptural story relates that after further help - "he recovered so that he could see everything clearly." (Mark VIII 22-25) Perhaps most of us do see the problem obscurely, but I hope that this compilation will help more of us to see "clearly".

STANDARDS FOR COMPOUNDING BY THE HOSPITAL PHARMACIST

Divers weights, and divers measures. Both of them alike are an abomination to the Lord.

PROVERBS 20:10

by SAMUEL GOLDSTEIN

DURING the past ten-year period of extensive structural and service expansion of American hospitals, pharmacists have contributed greatly to the advancement of the professional status of pharmacy in hospitals. They have accomplished this by demonstrations of [illegible] as pharmacists but also as administrators and organizers, and by their display of sound statesmanship in developing favorable professional relations with other members of the medical care team responsible for good hospital service.

These men and women have recognized the importance of the scientific approach to the professional activities of the pharmacist. It is, therefore, only natural that they have devoted much time to the consideration of various standards. The new minimum standards for hospital pharmacies are important guides to adequate pharmaceutical service and their recognition by medical and hospital organizations is tangible evidence of the inter-professional acceptance of the hospital pharmacist. The axiom that 'prophets are without honor among their own' does not always hold for the profession of pharmacy. The highest position in the century-old American Pharmaceutical Association is occupied by hospital pharmacist Dr. Don E. Francke; and hospital pharmacist Dr. W. Arthur Purdum is a member of the Council of the same Association. Both of these men have been major prophets in the field of hospital pharmacy.

Some time ago, Dr. Francke, in his capacity as editor of the splendid BULLETIN OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, wrote about basic standards for pharmacy internships. A further indication of getting down to basic standards in pharmacy was the article by George F. Archambault of the U. S. Public Health Service on standards for prescription containers. It seems quite logical that we should now discuss the standards for the compounded prescriptions that are dispensed in those containers.

Compounded prescriptions can be divided into two groups.

1. *Official preparations.* a) When compounded or manufactured in at least the monograph quantity, the present official standards are generally reasonable. Some times an analytical control laboratory is required to assure those standards. b) When official preparations are compounded in smaller quantities, proper standards for extemporaneously compounded preparations should be met.

2. *Unofficial preparations.* Most of the compounded prescriptions are in this division, but as yet no official standards are set for them. The most reasonable and equitable standards for these preparations are those based upon the weights of the medicinal ingredients requested in the prescription. The tolerances that have been

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developed on this basis are the most reasonable and equitable standards available for two general reasons. First, they are the only standards that have been developed to a stage of useful application; and secondly, actual application has proved them to be reasonable.

It is not now the general practice in all the states in this country, to check the compounding accuracy of retail pharmacists or of hospital pharmacists. British pharmacists are more keenly aware of the need for uniform standards for compounding since the development of the Drug Testing Scheme under the National Health Service law. John C. H. Hanson, the chief pharmacist of the three hospitals in Hertford County, England, reported last year that test prescriptions are filled under the National Health Service. He also stated that in the consideration of the analyst's reports the work on prescription tolerances published in the *Journal of the American Pharmaceutical Association* is valuable. Those publications have presented in detail the evaluation of the proposed tentative standards for assayable liquid preparations. Statistical consideration of the best obtainable data resulted in a system in which the extent of permissible error or tolerance increases as the prescribed quantity of the medicinal ingredient decreases. This obviously logical system was presented before the new standards for weight variations in tablets and dry-filled ampuls were determined and published in the U.S.P. XIV and the N.F. IX. No one is surprised that these new standards show that wider tolerances are required for smaller units, even when controlled machined products are involved. However, some individuals appear to find it difficult to believe the results of the tolerance studies that show the human pharmaceutical machine following a similar behavior pattern.

Proposed Tolerance Limits

The proposed standards for compounded liquid preparations are based upon the work of practicing retail pharmacists. They are very likely quite lenient for hospital pharmacists. However, the only way to check that is to make a proper survey among the latter group of compounders.

Briefly stated this is the proposed system of tolerance assignment. If all extemporaneously compounded liquid preparations are divided into five ingredient-weight groups, Group I would include ingredient-weights of 17.5 Gm. or more, and any assayable preparation belonging in this group would be assigned a tolerance of 7.5 percent. Group II would include weights of 5 Gm. to 17.5 Gm. and would assign a tolerance of 10 percent. Group III would include weights of 2.25 Gm. to 5 Gm., Group IV would include weights of 0.5 Gm. to 2.25 Gm., and Group V would include weights of 0.49 Gm. or less. The tolerances assigned to preparations belonging in these latter groups would be 12.5 percent, 15.0 percent, and 17.5 percent, respectively. It would be possible for a preparation containing 5 assayable ingredients to belong in all 5 groups and to have the appropriate tolerance assigned for each ingredient.

Mr. A. N. Smith, in the *British Pharmaceutical Journal*,[2] begins a discussion of standards for tablets with the statement: "It has been said that official controls give the most satisfaction to those who initiate them. Nevertheless, most manufacturers of pharmaceutical products will agree that controls are necessary in order to ensure uniform standards of purity and accuracy of dosage." It is understandable why the initiator of controls for extemporaneously compounded drug products would derive satisfaction from them after they became the official standards. For one thing, it would probably indicate that he had lived a fairly long time. Mr. Smith goes on to discuss the variations in the standards for compressed tablets in the pharmacopeias of different countries; and the variations are many. About the only pharmaceutical preparations for which, as a group, international official standards do not vary are the extemporaneously compounded products. The absence of official standards for these products is universal.

Need For Standards

Why should these standards be established and utilized? Some retail pharmacists feel that they would increase the red tape and record-keeping of the pharmacist. There is no basis for such concern; because only the control agency keeps the records. Should we seek to keep compounding deviations within reasonable limits? Any pharmacist with professional pride must agree that we should, and most pharmacists believe that their work is reasonably accurate. Professional protection of the public health demands it. Are the proposed tolerance limits that vary from 7.5 percent to 17.5 percent for stable ingredients reasonable? Practical application shows they are. They should be utilized as tentative standards. Some individuals are skeptical when they are told that the proposed tolerances for extemporaneously compounded products are within the range of tolerances allowed in the U. S. Pharmacopeia. It is true that they are.

For more than 14 years I participated in state control activities. I had many opportunities to observe the devastating effect of reports of erroneously compounded products upon the public health officials and associated medical groups. To ask those people to accept pharmacists as professionally trained men and women appeared to some of them a mockery.

How should we improve compounding precision? Certainly this should not be part of the retail pharmacy or the hospital pharmacy internship program. It is definitely in the province of our regular pharmacy course. Students of pharmacy should be taught the most precise techniques that can be practically applied in pharmaceutical compounding. Then all the assayable preparations compounded by the students should be tested. The students should be informed of the extent of deviation in each assayed product. If the deviation exceeds an established limit, the student should again compound the preparation until his product is acceptable. This procedure would enable all students, and some teachers, to learn more about reasonable limits of error in compounding. Some of those students are the future hospital pharmacists. We cannot yet say how accurate is the compounding of the present group of hospital pharmacists. Nevertheless, I believe you will agree that if the proposed method of teaching is adopted, the hospital pharmacists, as well as the retail pharmacists, of the next generation might possibly confound those critics of our professional abilities who base their opinions on the reports of the official drug analysts.

In the July-August, 1951 issue of THE BULLETIN, Editor Francke points out that the problem of regulating the practice of pharmacy in hospitals is a new one to many boards of pharmacy. One of the established functions of many boards of pharmacy is the periodic check on the compounding accuracy of pharmacists under their jurisdiction. The aspirin stock of many hospital pharmacies could be depleted by the headaches that can be induced by the peculiar ideas about proper limits within which small quantities of pharmaceutical preparations should be compounded. It is unfortunate that some individuals who have these peculiar ideas are appointed to postions of authority in some states. Establishment of uniform official standards for extemporaneously compounded preparations would protect the pharmacist against unqualified abuse even while those standards would help to make the compounders precision conscious and thus help protect the public.

The Committee on Prescription Tolerances of the American Pharmaceutical Association has recommended that standards for extemporaneously compounded liquid preparations should be recognized. The Committee approved the system of tolerance assignment that was published in the *Scientific Edition of the Journal of the A.Ph.A.*[3,4] The American Pharmaceutical Association has recently published a series of articles in which the fundamental factors affecting accuracy in compounding were discussed. These articles were intended primarily to remind practicing pharmacists to be accurate in their professional work. Apparently, they also appealed to many pharmaceutical educators and to pharmacy and other public health officials at the state and federal agencies. The demand for reprints led to the compilation of these articles in the form of a pamphlet for convenient reference.

Educator's Role

Deans of Colleges of Pharmacy have ordered these pamphlets for distribution to their students. The Deans of all the Colleges of Pharmacy should do that with their present students and with their new students in pharmaceutical compounding each year. The thorough understanding of these fundamental factors affecting accuracy, and a teaching system that will constantly remind the students of the need for accuracy and that will make them realize the simple precautions that are required to achieve reasonable accuracy in compounding could produce notable results.

The phenomenal growth of the professional recognition of the hospital pharmacist in recent years has been the direct result of the efforts of the capable and aggressive leaders who developed within this segment of the pharmacy profession. By utilizing proper standards in your own hospital pharmacy tests, and by assisting in the establishment and the official promulgation of standards for extemporaneously compounded pharmaceuticals, these men and women can contribute to the elevation of pharmacy as a professional calling in the minds of the students and practitioners of pharmacy as well as in the opinion of the medical and public health authorities.

REFERENCES

1. Hanson, J. C. H.: Typical Days in a British Hospital Pharmacy, *Bull. Am. Soc. Hosp. Pharm.* 7:221 (July-August) 1951.
2. Smith, A. Nutter: *Pharm. J.* (London) 167:323 (Nov. 3) 1951.
3. Goldstein, S. W.: Standard Tolerances for Pharmaceutical Compounding. A Basis for Their Establishment. II. Liquid Preparations., *J. Am. Pharm. Assoc., Sci. Ed.* 38:131 (Mar.) 1949.
4. Goldstein, S. W.: Standard Tolerances for Pharmaceutical Compounding. VI. Additional Data on Liquid Preparations, *J. Am. Pharm. Assoc., Sci. Ed.* 40:186 (Apr.) 1951.

A.A.A.S. Meets in St. Louis—

Hospital pharmacists participated in the Joint Session of the A.A.A.S. Subsection Np-Pharmacy held in St. Louis, December 29 and 30. The SOCIETY is an Associated group of the American Association for the Advancement of Science and our members participated in the Sessions along with representatives of the A.Ph.A.'s Scientific Section, the American Association of Colleges of Pharmacy and the American College of Apothecaries. George Archambault, chief of pharmacy service in the Division of Hospitals of the Public Health Service, served as program chairman. Allen Beck, president-elect of the SOCIETY was the ASHP representatives.

Presentation of scientific papers and panel discussions comprised the two-day meeting. Of special interest to the hospital pharmacists were the panel discussions covering the accreditation of hospital pharmacies and approval of the pharmacy internship and residency programs; and the content of hospital pharmacy courses in schools of pharmacy. In each case, the various associations and groups concerned were represented on the panel and there was opportunity for audience participation. In addition to the hospital pharmacists, participants in the panels included: Miss Martha Johnson, Joint Commission on the Accreditation of Hospitals; Dr. James R. Shaw of the U. S. Public Health Service; Mr. Ray Kneifl of the Catholic Hospital Association; Dean Louis Zopf of the American Association of Colleges of Pharmacy; Dr. Donald C. Brodie, University of California School of Pharmacy; and Dean Glenn L. Jenkins of Purdue University.

The following abstracts cover the papers presented at this meeting by hospital pharmacists:

Experiences With a New Method of Producing Distilled Water for the Hospital Pharmacy, by Mary A. Lane, Thomas A. Manzelli and Herbert L. Flack, Jefferson Medical College Hospital, Philadelphia, Pennsylvania.

In the journal *Science 151*:552 (1952), E. T. Margolis has reported the successful use of a device for trapping entrained liquid in compressed air lines, the Selas "Liqui-jector", in the preparation of water meeting all the requirements for Water for Injection, U.S.P. The original report showed a condensate of 0.1 to 0.3 ppm that was pyrogen-free, said condensate being used for the preparation of injectable and non-sterile products.

Knowing of the need everywhere, and especially in the hospital pharmacy, for a source of pyrogen-free freshly distilled water of very low solids content, and of the need for a compact distilling unit that would be easily installed and that would require little if any cleaning or attention, the authors contacted the Selas Corporation. With the very sincere cooperation of Mr. George W. Jordan, Jr., a "Liqui-jector" unit was installed in the author's pharmacy, with little expense involved. The unit was of 20 gallon per hour capacity.

Installation required merely the extension of a nearby steam line, the purchase of a pressure regulator and a steam trap, and the purchase of a condensing unit. Total cost of unit without installation charges approximates $230. This compares very favorably with $850 cost of the usual 20-gallon per hour still and condenser unit that would produce pyrogen-free water of such low solids content. The space required for such units is also in favor of the "Liqui-jector" and condensor as against the conventional-type still, requiring about one-third less wall space, as is the case of installation and of cleaning.

This distillation device is actually a filter that allows only steam to penetrate the filter wall, and that rejects the entrained materials usually found with steam, such as water, solids, oil, etc. It is thus capable of taking almost any kind of steam, and through filtration, making a very pure condensate from the original steam. In the author's institution, the steam is purchased from a central plant about six miles from the hospital, yet on the first run without a change of candle, it was possible to obtain water of 0.5 ppm total solids, (about 600,000 ohms specific resistance at 18 degrees Centigrade.)

Additional experiences are related to show the tremendous potential of this new use for an old device in the hospital pharmacy. Hospital pharmacists are urged to investigate these possibilities.

The Use of Isopropanol in Ice Bags by Margaret Trevis, Staff Pharmacist, and Evlyn Gray Scott, chief pharmacist, St. Luke's Hospital, Cleveland, Ohio.

A ten per cent (v/v) solution of isopropanol 99%, frozen in the ice bag in which it is to be used, saves both nursing time and money for the hospital.

Although the sensation of cold is produced for a length of time comparable to that of water, the quality varies; the sensation of cold produced by isopropanol has a better kinetic feeling than that produced by ice and cold water.

How Many Sterile Gauze Sponges Are Needed to Adequately Protect a Clean Wound? by Sister Mary John, Mercy Hospital, Toledo, Ohio.

Are we conservative enough in the use of surgical dressings? We see some surgeons, true to tradition, cover an incision in the surgery with about a dozen sponges, thick abdominal pad and adhesive. About 2,000 cases have been operated on and no dressing applied by a Toledo group of surgeons, with primary healing. In view of the current trend of leaving incisions exposed after surgery, which is an economic factor to the patient, sixteen cultures were made to determine if the skin could be kept sterile by frequent use of antiseptics after preparation for surgery with Hexachlorophene or Para-Chlorametaxylenol. Uncovered skin required antiseptics to be applied hourly to maintain sterility, while skin covered with one gauze sponze remained sterile for 48 hours.

THERAPEUTIC TRENDS

New trends in medicine and pharmacy include NEW SOLVENT FOR IM DIGITOXIN — TREATMENT FOR PRURITUS ANI — COMPARISON OF PLASMA EXPANDERS — AN ORAL ANTIFERTILITY — SUCCINYLCHOLINE IN TETANUS

Edited by LEO F. GODLEY

New Solvent for IM Digitoxin

Parenteral administration of digitoxin is often desirable in patients with congestive heart failure or with arrhythmias who are comatose, nauseated, or uncooperative. The intravenous route should be reserved for cardiac emergencies and under such circumstances drugs like ouabain might be advantageously employed. Digitalis glycosides in alcoholic solution intended for intravenous use have been given intramuscularly but they usually produce severe local pain and sometimes tissue necrosis develops. It has been noted that effects of these alcoholic solutions are not consistant because of irregularity of absorption.

An account of digitoxin administered intramuscularly in a different solvent was published in *Am. Heart J.* 44:787 (Nov.) 1952. The hazards of the official injection in intramuscular use appear to be overcome with this new solvent. The following mixture was used for the intramuscular injection:

	Percent
Polyethylene glycol 300	39
Benzyl alcohol	4
Ethyl alcohol	4
Distilled water	19
Glycerin	44

In 21 patients digitilization was initiated by the intramuscular injection of 0.6 mg. (3 cc.) in each gluteus maximus. Very slight to moderate pain (about the same degree as noted with parenteral liver) was noted with digitalizing doses. No pain was experienced with maintenance doses. There was no occurrence of abcess or nodule formation. Studies showed that the solvent was not toxic in amounts that would be used in digitalis therapy.

Treatment for Pruritis Ani

Pruritis ani includes a number of perianal dermatoses characterized by itching. Old methods of treatment involve the local application of antiseptics, anesthetics, protectives, and antihistiminics; injections of anesthetics, acids, and alcohol and even x-ray, diet, psychotherapy or surgery. There are several pruritis producing factors; this study deals particularly with those cases in which improper hygiene is the causative factor. Apparently, ordinary soaps and harsh scrubbing do little to relieve the itching and irritation and such treatment may even aggravate the condition.

Kallet and Davlin, working in Detroit, published an account of their study in the *J. Mich. State Med. Soc.* 51:1447 (Nov.) 1952. A series of 45 patients with pruritus ani in whom improper hygiene was the causative factor were treated with a synthetic antiseptic detergent, phisoHex (a synthetic detergent with G-11), Winthrop-Stearns. The procedure outlined for these patients to follow consisted of bathing the area once daily at bedtime. Only one lathering was recommended and this to be done with the palm of the hand followed by a thorough rinse and drying with a soft towel using a patting or blotting motion rather than rubbing. Patients were cautioned to follow these directions and to avoid overtreatment.

The results, after seven months of the study have been gratifying to the extent that these clinicians are of the opinion that the treatment needs further investigation.

Comparison of Plasma Expanders

A study to compare the ability of various known plasma expanders was conducted in California by Hyde *et al* and published in *Surg. Gyn. Obst.* 95: 657 (Dec.) 1952. Dextran, Gelatin, Plasma, and Concentrated Serum Albumen were the agents evaluated in this study. Patients who were hospitalized on the orthopedic service but otherwise clinically normal were used as subjects. There were no reactions observed. Controls were conducted on patients using normal saline. There was no significant blood volume change in the controls. The following table illustrates the salient features of this work:

Solution	Initial Blood Volume increase (15 minutes) (cc.)	Time required to attain maximum volume	Maximum Volume attained (cc.)	Volume After 20 hours (cc.)
Dextran 6%, 500 cc.	1000	5 hrs.	1350	275
Gelatin 5%, 500 cc.	960	1 hr.	1118	152
Plasma, 500 cc.	830	45 min.	1173	133
Serum Albumen, Conc. 100 cc.	827	8 hrs.	1342	236

Dextran showed the greatest initial rise and the longest effect; gelatin was slightly less effective. Serum albumen acted differently, showing an early rise, then a fall, then a sustained rise to maximum volume. Plasma showed the least effect as a plasma volume expander. There was no discussion of the relative value of these agents in conditions characterized by blood volume depletion.

Phosphorylated Hesperidin — An Oral Antifertility Drug

Phosphorylated hesperidin is an antihemorrhagic factor which inhibits hyaluronidase. The enzyme (hyaluronidase) hydrolyzes the hyaluronic acid component surrounding the ovum making it susceptable to the attacking sperm. Hence, if phosphorylated hesperidin is present, this action is intercepted and the sperm is not able to pierce the layer surrounding the ovum and conception does not occur.

Sieve reports a study of 300 married couples in *Science* 116:373 (Oct. 10) 1952. Individuals participating were between 17 to 43 years of age. All couples were capable of having children. Phosphorylated hesperidin was given in a daily dose equivalent to 5 mg. per kg. body weight. This was given in divided doses at mealtime. Both the husband and the wife were given medication. Toxicity on animals had been predetermined. Effective serum saturation of the drug was acquired after 10 days of taking the drug in the required amount. Omission of doses by either partner for a period of 48 hours makes it necessary to take the antifertility agent for 10 more consecutive days before effective concentration is attained. Fifteen couples took up to 25 times the normal dosage without ill effect either by the oral or intravenous route. No interference of action of other drugs given concomitantly was noted.

Some of the participants stopped taking the drug and had normal healthy children. There was no effect on the ease of impregnation, the course of pregnancy or the child after having taken the antifertility agent.

It was the general opinion of the couples that this means of contraception was more compatible with normal marital function than was mechanical devices. This study was continued for a period of 30 months and constitutes only a preliminary report. Much more work needs to be done for a final evaluation of this drug.

Succinylcholine in the Treatment of Tetanus

An account of succinylcholine being used in the treatment of a case of tetanus was reported in *Lancet* 263:808 (Oct. 25) 1952. The patient was receiving proper doses of tetanus antitoxin. Succinylcholine served as a skeletal muscle relaxant and advantage was taken of its rapid action and destruction to abolish exaggerated muscle tone without seriously weakening the respiratory apparatus. This is more difficult to accomplish in tetanus than in the normal state.

The drug was given by continuous intravenous drip for three and one-half days at a dosage rate of 0.2 mg. to 2.5 per minute. These authors felt that succinylcholine was more effective than curare type drugs. By varying the rate of administration a continuous balance between muscular relaxation and respiratory paralysis was maintained. Practically constant medical supervision is necessary to maintain such therapy. The patient was given a tracheotomy so that therapy could be facilitated.

Editor's Note: In the September-October issue of this section there appeared an abstract dealing with Stilbamidine. A more recent study published in the *J. Am. Med. Assoc.* 150:35, 1952 of a case of actinimycosis that responded to stilbamidine therapy. This drug is still being clinically evaluated and is not commercially available. It is available in the United States only through the Wm. S. Merrell Co. Comprehensive literature, outlining dosage, actions and uses is available through Dr. John B. Chewning of the above mentioned source. LFG

TIMELY DRUGS

Benadryl with Hyoscine

. . . is a combination of two active medicaments valuable in prevention and treatment of motion sickness and in treatment of parkinsonism. Each tablet contains Benadryl Hydrochloride, 25 mg. and Hyoscine Hydrobromide, 0.325 mg.

Brist-O-Matic

. . . is a new plastic disposable syringe introduced by Bristol Laboratories. It is enclosed in a plastic case with a plastic protecting scabbard for the sterile needle. Varying dosages 600,000 units or 1,000,000 units —of Flo-Cillin Aqueous are sealed inside the case, stoppered by a rubber plug.

Ether for Anesthesia

. . . is now packaged in an improved can with better storage qualities. Through a patented process recently developed by the company's research chemical specialists in purity ether, Mallinckrodt's improved containers provide further protection against such undesirable changes as the formation of aldehydes and peroxides.

Coricidin With Codeine

. . . is a combination of the antihistamine, Chlor-Trimeton combined with the analgesics and antipyretics, aspirin, acetophenetidin, caffeine and codeine phosphate. This preparation is used for relief of distressing symptoms of the common cold, such as myalgia, sinusitis and coughs due to colds. Coricidin with Codeine also acts as an unusually effective agent for relief of pain which may accompany dysmenorrhea, bursitis, severe headache, sciatica, neuralgia and many other painful disorders. Tablets containing either ½ or ¼ grains of codeine phosphate are available from Schering.

Desoxets

. . . combines the anoretic-euphoric effect of Desoxyn (5 mg. per tablet) with the nutritive-therapeutic effect of nine important vitamins to protect against vitamin deficiencies. Desoxets are used wherever a sympathomimetic amine is indicated along with adjunctive multivitamin treatment. One tablet taken immediately upon arising and another about an hour before lunch usually suffice to cause depression of appetite and accompanying elevation of mood and mental activity. The onset of effect is usually within 20 to 60 minutes. Desoxets should be used with caution in persons with cardiovascular disease, thyroid disturbance, insomnia, hypertension, in persons with advanced age, or persons who have shown sensitivity to ephedrine or ephedrine-like substances. Desoxets are supplied by Abbott Laboratories.

Diagnex

. . . is Squibb's Quinine Carbacrylic Resin used for detecting gastric anacidity in cases of suspected stomach cancer, pernicious anemia or gastric polyps, without submitting the patient to the discomfort of intubation.

Diagnex is an ion exchange resin in the form of an insoluble powder. When swallowed in a glass of water by the patient the quinine in Diagnex is displaced by the hydrogen ions of the free hydrochloric acid normally present in the stomach. Fifteen to twenty percent of the displaced quinine is excreted in the urine within two hours. Thus a simple urine assay for the presence or absence of quinine indicates the presence or absence of free hydrochloric acid in the stomach.

Gantricillin

. . . providing the combined antibacterial action of Gantrisin and Penicillin G, is being supplied in tablet form by Hoffmann-La Roche.

Gelfoam Powder

. . . for oral use as an aid in attaining hemostasis in gastro-duodenal hemorrhage, is supplied by the Upjohn Co. Gelfoam is used for the control of bleeding in the upper gastro-intestinal tract. It may be used with thrombin to speed clot formation.

Histoplasmin

. . . for the diagnosis of histoplasmosis and the differentiation of possible histoplasmosis from coccidioidomycosis, sarcoidosis and other mycotic or bacterial infections and the interpretation of roentgenographic plates showing pulmonary infiltrations and calcification is now available from Parke, Davis and Co. It is available in packages containing two 1 cc. vials, one containing 0.01 cc. of Histoplasmin and the other containing 1 cc. of diluent.

Hydergine

. . . is a new adrenergic blocking agent developed by Sandoz Laboratories. It has been found effective in the treatment of hypertension and peripheral vascular diseases. Hydergine is supplied in 1 cc. ampules, each containing dihydroergocornine 0.1 mg., dihydroergocristine 0.1 mg., and dihydroergokryptine 0.1 mg. as methanesulfonates.

Myciguent

. . . is an emulsion-type ointment containing Neomycin Sulfate, 5 mg. per gram. Available from Upjohn's, Neomycin is active against a variety of both gram-positive and gram-negative organisms, and is generally more potent than other available wide-range antibiotics. Used as a wet dressing made from an aqueous solution or as an ointment or cream, it is effective in treatment of such skin infections as impetigo, barber's itch, infectious eczematoid dermitis, pustules, pustular acne, infected ulcers, and boils. It is also useful as a treatment for burns, both for immediate application to prevent infection and treatment of secondarily infected burned areas. Neomycin is well tolerated and relatively non-irritating when applied locally to the skin in the recommended concentrations.

Natabec

. . . is a new vitamin-mineral supplement especially adapted to aid in achievement of optimum nutrition during pregnancy and lactation. Natabec Kapseals are supplied by Parke, Davis and Co.

Neosone Ophthalmic Ointment

. . . contains Cortisone Acetate, 15 mg. and Neomycin Sulfate, 5. mg. Neosone has a dual action, the Cortisone relieving inflammation and the Neomycin preventing or combating infection. Supplied by Upjohn Company, Neosone is well tolerated and relieves the inflammation caused by allergy, trauma and infection, as well as attacking the organisms responsible for infection. It is indicated in the treatment of various forms of conjunctivitis, keratitis, marginal ulceration and mechanical, thermal or chemical trauma.

Novogran

. . . is a preparation of therapeutic vitamin capsules recommended for the use in conditions of physiologic stress. In cases of the sick and injured, increased requirements of the B-complex vitamins and vitamin C are needed and Novogran is designed to meet this need. Novogran capsules are available from E. R. Squibb.

Pargran

. . . is Squibb's multiple vitamin capsules. The new preparation incorporates the current recommendations of the Committee on Therapeutic Nutrition, Food and Nutrition Board of the National Research Council. Pargran may be used for the general maintenance of persons whose diets do not meet the standards established by the Council.

Prantal Methylsulfate

. . . for peptic ulcer and other conditions associated with hyperacidity or hypermotility of the stomach, are available from Schering Corporation. Prantal Methylsulfate has the advantages of specificity of action, relative freedom from unwanted side actions, avoidance of bitter taste, and longer duration of action usually obviating the need of interrupting sleep to administer medication.

Reabela Tablets

. . . are supplied in bottles of 1,000 for hospital use by the Reaco Products of Durham, N. C. Each tablet contains a fixed ration of the natural alkaloids, hyoscyamine, atropine and hyoscine, approximately equivalent to the total alkaloidal content of five minims of Tincture of Belladonna combined with ¼ grain of Phenobarbital. It is useful in pylorospasm, nausea and vomiting, renal and biliary colic, enuresis, asthma and dysmenorrhea.

Rubramin

. . . is now supplied in a solution containing 1000 mcgm. of crystalline vitamin B_{12} per cc. for the treatment of trigeminal neuralgia. This large dosage form has been made available by E. R. Squibb and Sons following reports indicating that massive doses of Vitamin B_{12} appears to show promise in relieving the pain of trigeminal neuralgia. In the majority of the cases thus far reported, relief from paraoxysmal pain is prompt. The therapy also appears to cause complete or partial relief of the secondary burning parasthesias. High potencies of vitamin B_{12} have also been used experimentally in diabetic neuropathies, alcoholic and other severe nutritional neuropathies, and in osteoarthritis.

Sulestrex Piperazine Elixir

. . . (Piperazine Estrone Sulfate, Abbott) is effective in the treatment of menopausal syndrome. One five cc. teaspoonful contains 1.5 mg. piperazine estrone sulfate and is available in an orange flavored elixir. The dosage of Sulestrex Piperazine Elixir varies.

Tosanon

. . . is a new cough preparation containing 75 mg. mephenesin, 1.67 mg. of dihydrocodeinone bitartrate, 400 mg, of potassium citrate and 7.5 mg. of pyrilamine maleate per teaspoonful. Tosanon is available from Organon, Inc.

Theridol Kapseals

. . . are Parke, Davis high potency vitamins indicated in the treatment of dietary deficiency states.

Urokon Sodium 70%

. . . is Mallinckrodt's new concentrated radiopaque medium for x-ray diagnosis. The 70 percent solution has unusual opacity to x-rays due to its high iodine content, each cc. containing 461 mg. of iodine in organic combination. The company will continue to supply Urokon Sodium 30 percent.

Vergitryl

. . . Squibb's Veratrum Viride Fraction, is a parenteral form of uniformly standardized purified extract for the treatment of acute hypertensive episodes. For intramuscular use, Vergitryl will be found especially useful in treating the hypertensive complications of pregnancy.

Vi-Lin Drops

. . . is an Abbott preparation of multivitamins for infants and children. The formula supplies a well balanced dietary supplement containing six vitamins—A, D, B_1, B_2, C and Nicotinamide. The vitamin A is synthetic, the vitamin D is provided by viosterol —thus obviating fishy odors and flavors or allergic reactions. Vi-Lin Drops are supplied in 15 cc. and 30 cc. bottles with graduated dropper.

Notes and Suggestions

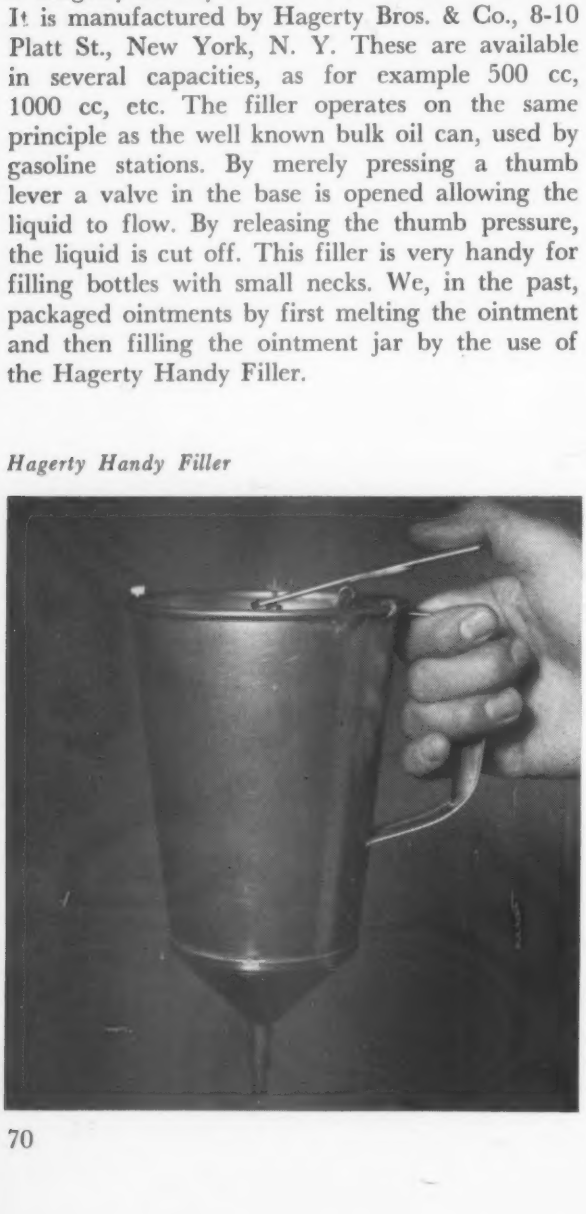
by Allen V. R. Beck

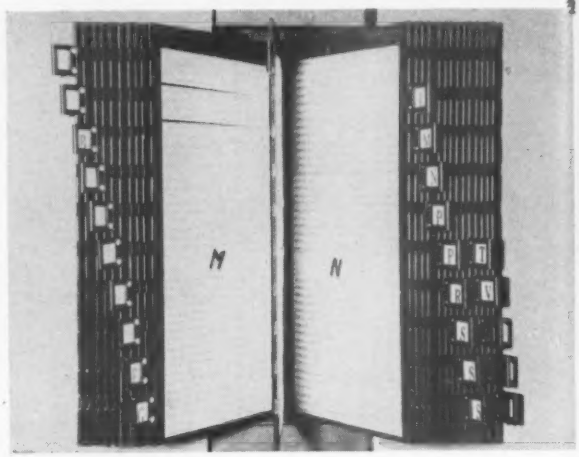
In a previous issue of The Bulletin I began a description of some of the manufacturing equipment we have found useful at the Indiana University Medical Center Pharmacy. At this time I would like to mention a few additional pieces of useful equipment.

Hagerty Handy Filler

When it is necessary to fill a small batch of bottles (24-36) we do not use the bottle filler. To do this job rapidly and with little effort, we employ a Hagerty Handy Filler made of stainless steel. It is manufactured by Hagerty Bros. & Co., 8-10 Platt St., New York, N. Y. These are available in several capacities, as for example 500 cc, 1000 cc, etc. The filler operates on the same principle as the well known bulk oil can, used by gasoline stations. By merely pressing a thumb lever a valve in the base is opened allowing the liquid to flow. By releasing the thumb pressure, the liquid is cut off. This filler is very handy for filling bottles with small necks. We, in the past, packaged ointments by first melting the ointment and then filling the ointment jar by the use of the Hagerty Handy Filler.

Hagerty Handy Filler





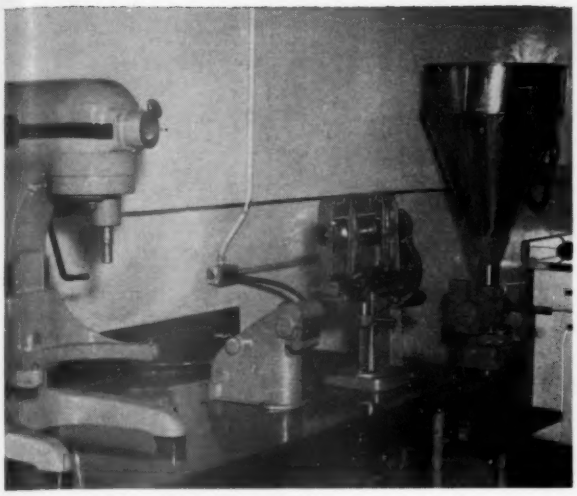
Acme Flex-O-Line

Price Lists

To many people the problems involved in preparing an accurate up-to-date price list is a headache. To eliminate this problem we purchased from Acme Visible Records Inc., of Chicago, a telephone "Flex-O-Line" No. 6012. This price book is made up of 20 steel sheets each side holding forty-eight ¼" strips per side. These strips are thin strips of wood with a face of paper. They come in sheets of approximately 25 strips. When a new price is received, a new strip for that particular product is typed. By bending these sheets on the marked line, you can break off a single strip. This strip is then inserted into its proper place in the "Flex-O-Line." The main advantage of using this "Flex-O-Line" is the rapidity of changing over and the ease of changing the prices (or strips). We are definitely convinced that this particular type of price list is by far the best obtainable.

Safety Siphon

To provide a safe method of handling corrosive or caustic liquids we employ a "Spears Safety Syphon," manufactured by the Alven Spears Company of Cambridge, Massachusetts and marketed by the Safety First Equipment Co., Pittsburgh, Pa. This is a plastic syphon with a built-in hand pump. This pump eliminates the use of vacuum or pressure to start the syphon. This syphon has the additional advantage of an "on-off" valve at the outlet base. We have found this syphon an indispensible item in handling many of the caustic liquids of a manufacturing room.



LEFT TO RIGHT: *Hobart Mixer, Tube Crimper, Tube Folder, Tube Filler.*

Ointment Filler

After milling, the ointment is placed in the hopper of the tube, or jar, filler shown. From the tube filler the tubes pass on to the tube folder and crimper. This tube filler, folder, and crimper are all manufactured by, F. J. Stokes Co., of Philadelphia. Although this ointment tube set up is very good and very convenient, we feel that a semi-automatic machine that would do all three jobs would be much more practical and would save considerable more labor. This might be a machine such as F. J. Stokes Series 79-80.

Ward Boxes

The ward box made for us is constructed of 16 gauge type, 316 stainless steel. The bottom is approximately a 40 percent perforation with ¼" holes. As these boxes are made of stainless steel with perforated bottoms, they are very easily kept clean by the use of steam. This box measures 21" by 13" by 8". The large Compartments in each corner are large enough for the amber gallon bottle.

Label Typer

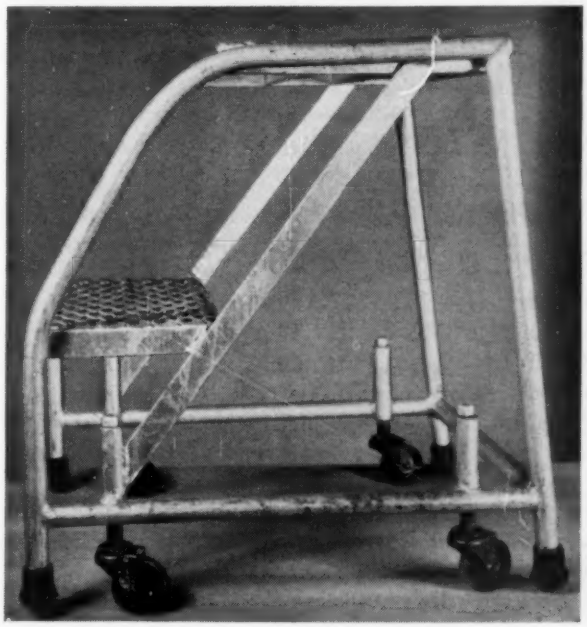
The typewriter stand was developed to hold more conveiently roll labels for typing. In our narcotic system each vial has a number or code. When a new label is required all that need be done is to start your label through the typewriter, type on the number, and tear off the label. This stand makes these labels always readily available. The so called "blank shop labels" are also kept on this stand. This greatly reduces the time involved in typing new labels. The typewriter used on this stand does not have any upper-case letters, which eliminates the necessity of using the shift key when typing labels. This saves time and makes an easier job of label typing.

Convenient Label Holder As Described

Safety Step Ladder

As most of you know a small step-ladder with casters on the feet is a very dangerous piece of equipment. To eliminate this danger, we use a safety step ladder, marketed by, Precision Equipment Co., Chicago. This is a pipe step-ladder with expanded metal for steps, mounted on casters. These casters are spring mounted so that when weight is put on the ladder the weight pushes the casters up and the ladder rests on its four rubber tipped feet, therefore, becoming unmoveable. When the weight is released, the springs raise the ladder up about two inches off the floor and you once again can roll the ladder about.

Safety Step Ladder Shown Resting On Casters From Which Position It Is Freely Moveable



CURRENT LITERATURE

Edited by SISTER MARY ETHELDREDA, *St. Mary's Hospital, Brooklyn, N.Y.*

American Professional Pharmacist

NOVEMBER, 1952—"Narcotic Regulations and Procedures for Hospitals," by John J. Zugich. A concise, comprehensive review of the progress report of the Committee on Narcotic Regulations of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS presented at the Philadelphia Decennial Meeting and intending to clarify interpretations of narcotic regulations.

page 998

"Views and Comments," by Forum Readers.—A discussion of hospital pharmacy facilities and relationship to inspections; also an opinion on the use of a formulary system.

page 1003

DECEMBER, 1952—"Planning Hospital Pharmacies," by A. M. Milne, Pharmacy Specialist Division of Hospital Facilities, U.S.P.H.S. An expert discusses hospital pharmacy design and layout in planning new or rehabilitating old hospital pharmacy facilities and apparatus.

page 1086

Hospital Management

NOVEMBER, 1952—"Stimulation of Research by Means of Grants—Its Promise and Dangers," by Isaac Starr, M.D. Section three and the concluding portion of a thought provoking article which began in the September issue.

page 98

DECEMBER, 1952—"The Administrator Views Present Day Challenge to Hospital Pharmacy," by Joe Vance. A discussion of the position of the hospital pharmacy in the entire picture of good hospital administration. *page 78*

Modern Hospital

SEPTEMBER, 1952—"N-Allylnormorphine—an Antagonist to Morphine," by Vernon G. Vernier, M.D. Describes the structure, historical development, pharmacological effects, antagonistic effects, mode of action and indications for use of this new drug. *page 106*

OCTOBER, 1952—"The Antibiotics: Pharmacodynamics and Principles of Therapy" by Theodore R. Sherrod, Ph.D., M.D. Describes Penicillin and Streptomycin covering the following topics: chemistry, pharmacology, standardization, spectrum and principles of therapy, bacterial resistance, untoward effects and dosage.

page 108

NOVEMBER, 1952—"The Antibiotics: Pharmacodynamics and Principles of Therapy." by Theodore R. Sherrod, Ph.D., M.D. Describes Chloramphenicol, Aureomycin and Terramycin in the same manner as mentioned above. A complete and comprehensive review. *page 108*

DECEMBER, 1952—"How to Buy Insurance for the Hospital," by Richard C. Sleeper and Dwight W. Sleeper. Included in the discussion is the policy coverage of the drug room and narcotics room.

page 82

J. Am. Pharm. Assoc., Pract. Pharm. Ed.

JANUARY, 1953—"Glycerinated Gelatin as a suppository Base," by L. F. Tice and R. E. Abrams. A rapid, simple method for making glycerinated gelatin suppositories is presented along with the results of tests to determine solution time and stability at various degrees of relative humidity.

page 24

"The Formulation of a Water-Soluble Suppository Base," by W. H. Hassler and G. J. Sperandio. Three formulas for water-soluble suppository bases are given and the author points out the advantages of the water-soluble bases over those made with cocoa butter. *page 26*

Southern Hospitals

DECEMBER, 1952—"With the Hospital Pharmacist," by Joe Vance. Contains an interesting discussion of the terms "Druggist," "Pharmacist" and "Apothecary." *page 46*

"Isonicotinic Acid Derivatives in the Treatment of Pulmonary Tuberculosis", by D. Dale Archer. The place in therapy of this drug as presented by the associate director of clinical development of Lederle Laboratories at the mid-year meeting of the Southeastern Society of Hospital Pharmacists. *page 48*

BOOK REVIEWS

A TEXTBOOK OF PHARMACOLOGY. By William T. Salter, M.D. Published by W. B. Saunders Company, Philadelphia and London, 1952. 1240 pages, illustrated, 18 x 26 cm. Price $15.00.

The author, the late Dr. Salter, had foreseen the need for a textbook of pharmacology that would effectively bridge the gap between the laboratory science of pharmacology and the clinical practice of therapeutics. It was with this purpose in mind that he has written this book, as implied in the preface. That the author has been able to fulfill this aim quite adequately, can be well understood in view of his rich background of clinical experience, biochemical and pharmacological research, and student teachings.

The book is divided into four parts. Part I deals with general principles of pharmacology, and presents in three chapters the usual introductory information—history, scope, prescription writing, and general principles of drug action. Parts II and III constitute the main parts of the book, and they are subdivided into nine sections containing 52 chapters. Part II concerns the action of drugs on physiological mechanisms, such as the central nervous system, the cardiovascular system, the endocrine system, and the autonomic nervous system. The application of drugs in clinical medicine is discussed in Part III, in which one section is devoted to the use of drugs in disorders of various organs and body systems—the eye, the neuromuscular system, the alimentary canal, the uterus, and the skin. Another section considers the chemotherapeutic and chemoprophylactic agents. Part IV is composed of one chapter which briefly presents the subject of clinical toxicology.

The consistent arrangement of subject matter in the two main parts of the text is commendable. The following general order is employed in each chapter: Introduction and history; description and source of drugs; chemistry; drug action on special systems and organs; toxicity; absorption, metabolism and fate; official and non-official preparations, and dosage; biological and chemical standardization; new and unsolved problems concerned with pharmacodynamics and pharmacotherapeutics, and the appraisal of new theories and concepts; synopsis; references.

The material presented is complete and up-to-date, a very desirable feature for a textbook of pharmacology considering the great progress that has been made in this field of medicine during the past decade. The book is written in an informal style. This latter quality, in addition to the excellent typography, is conducive to ease in reading.

It is the opinion of this reviewer that this textbook of pharmacology could well be chosen as an addition to the hospital pharmacy library. The book affords a readable account of the principles and practice of pharmacology in relation to human disease. The selected bibliography at the end of each chapter, the abundant illustrations, and the complete subject index add to the usefulness of the book for reference purposes.

ALBERT L. PICCHIONI

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University of Arizona
Tucson, Arizona.

REVIEW OF PHARMACY. Seventh edition, 1952. By George W. Fiero, Phar.D., Ph.D. 6¼" x 9¼", 122 pages. Published by John Wiley and Sons, Inc., New York 16, New York. Price $3.25.

Fiero's *Review of Pharmacy* is precisely as the author states, a "ready reference." Although primarily a brief compendium of the official drugs and preparations designed for students, the book on a pharmacist's desk will give immediate answer to that sudden lapse of memory, such as the strength of a particular ointment or the solubility of a chemical.

Like its predecessor, the sixth edition, this new edition follows the current U.S.P. and N.F. custom of listing drugs by their English names, followed by the Latin Title in parenthesis, and synonyms in italics. The use of a columnar form, abbreviations, and chemical names gives the material its "ready reference" form of presentation.

The format follows previous editions to include five parts—Practical Pharmacy, Galencial Pharmacy, Materia Medica, Toxicology, and Elementary Chemistry. The Index, perhaps unlike most scientific texts, is short, with the following note: "This index does not contain organic or inorganic chemicals, which are found alphabetically . . . Synonyms are found on page 95," thus eliminating work if one is familiar with the text.

The section on Toxicology is excellent in its brevity, presenting that concise material which is most often needed quickly. Because of this brevity of presentation, Fiero's seventh edition of the *Review of Pharmacy* is well worth having on a reference book shelf.

JOANNE BRANSON

University Hospital
Ann Arbor, Michigan

USEFUL DRUGS. 15th Edition, J. B. Lippincott Co., Philadelphia, 1952. 262 pages. Price $2.50.

Useful Drugs is a collection of alphabetically arranged monographs on drugs that have been selected from the current editions of the U.S.P., N.F., and N.N.R. A concise and succinct evaluation of each drug embracing the action, usage, description, physical properties and dosage is given in an easily readable form. The Council on Pharmacy and Chemistry of the A.M.A. is responsible for it issuance and supervision.

A point which adds apparent educational independence but unfortunately subtracts from the usability of this small volume is the complete omission of trade name equivalents. For example, it would be a moderately difficult task for a patient to get a prescription filled for Methapyrilene HC1; and conversely, this volume would not help the physician to relate the trade name, Thenylene HC1, with any monograph listed therein.

As suggested in the preface, *Useful Drugs* would serve best in the capacities of medical school instruction and for state board examinations for medical students.

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Kalamazoo, Mich.

the Veterans Administration

PHARMACIST

Edited by EDDIE WOLFE, *Mt. Alto Veterans Hospital, Washington, D.C.*

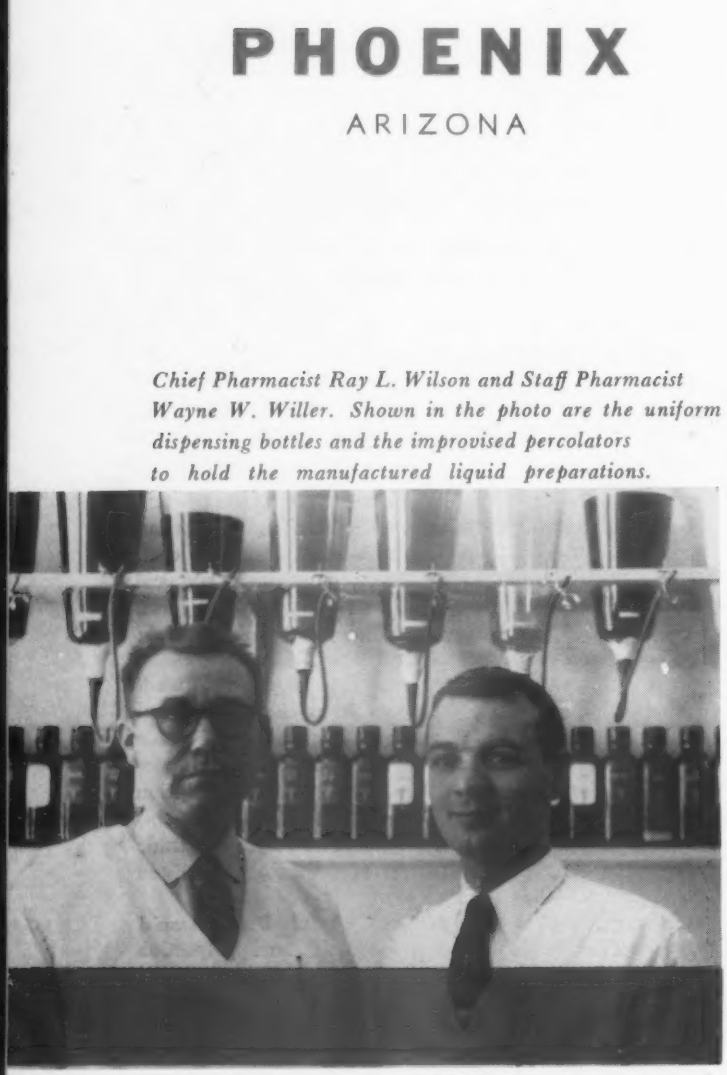
PHARMACY

V A REGIONAL OFFICE

PHOENIX

ARIZONA

Chief Pharmacist Ray L. Wilson and Staff Pharmacist Wayne W. Willer. Shown in the photo are the uniform dispensing bottles and the improvised percolators to hold the manufactured liquid preparations.



The Pharmacy of the Veterans Administration Regional Office, Phoenix, Arizona has been serving veteran beneficiaries of this area for over seven years. Ray L. Wilson, chief pharmacist, after his discharge from the United States Navy, was appointed to the position of pharmacist, and has been in charge of the department at this station since its opening in 1946.

Mr. Wilson has been well known in pharmacy circles in Phoenix and Arizona since 1932. He attended Phoenix College and the University of California and has been a Registered Pharmacist in Arizona since 1938. He is a member of the American Pharmaceutical Association, AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, Arizona Pharmaceutical Association of which he is a member of the Resolutions Committee, and is a past-secretary of the Maricopa County Pharmaceutical Association. He is also an active member of the United States Naval Reserve, Disabled American Veterans, and Veterans of Foreign Wars.

Mr. Wilson began the task of building an efficient, full-scale, operating pharmacy in the Outpatient Clinic, starting with very little in the way of drugs or equipment. With an intense desire to serve, and the experience that he gained as a hospital corps officer in the United States Navy, Mr. Wilson began building the Pharmacy.

In the early days of the Regional Office Pharmacy, in 1946 and 1947, the clinic had four physicians, two dentists, and one pharmacist administering medicine and treatment to the outpatient beneficiaries. The Pharmacy was filling approximately 600 prescriptions per month at that time. Today there are nine physicians, three dentists and two pharmacists on the staff, and the Pharmacy is filling over 2200 prescriptions per month:—more than 100 prescriptions are filled each working day. The Pharmacy will fill its 100,000th prescription sometime during the month of December, 1952.

The Outpatient Clinic has grown rapidly since its opening, as have all of the other Veterans Administration agencies throughout the country. Prescriptions filled by the Pharmacy have been

increasing at the rate of 12% to 15% each year and consequently the work-load has increased to such an extent that another pharmacist was added to the staff in February, 1952.

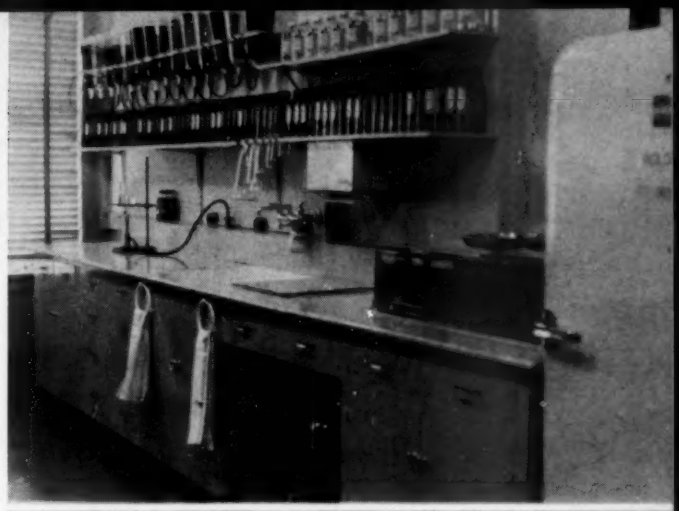
Mr. Wayne Willer, newly appointed Staff Pharmacist came to Phoenix from Sioux City, Iowa. He graduated from the University of Iowa, College of Pharmacy, in 1950 and had been practicing pharmacy in Iowa and Arizona until his appointment with the Veterans Administration. Mr. Willer is a member of the American Pharmaceutical Association, AMERICAN SOCIETY OF HOSPITAL PHARMACISTS, Iowa Pharmaceutical Association, American Legion, and currently registered as a Pharmacist in Arizona and Iowa.

With two pharmacists at this activity, the Pharmacy of this Veterans Administration Regional Office has been able to offer almost unlimited service to the outpatient physicians and patients. The Pharmacy manufactures in bulk some sixty odd formulas and preparations for use as stock in the filling of prescriptions. The amounts manufactured vary with the seasonal demand, and generally from 15 to 20 gallons of liquid formulas are made during a month. Extemporaneous prescriptions and manufactured items are increasing in number year by year.

The following enclosed photographs illustrate the physical appearance of the Pharmacy. Particular attention has been maintained throughout the physical layout of the room to facilitate the accuracy and efficiency with which the prescriptions of veteran beneficiaries can be handled.

The advances made in the Veterans Administration Pharmacy Program resulted from a desire on the part of many people to provide the best possible medical care for the veterans who served in the defense of their country. The services rendered by the Regional Office Pharmacy of Phoenix, Arizona, are typical of the many and varied services offered to our veterans. Everyday problems and procedures are being ironed out and resolved to make available to the veteran beneficiaries a pharmacy service second to none.

1. *Manufacturing Section of the Pharmacy.*
2. *View of the Pharmacy showing Pharmacist Willer dispensing a prescription to a veteran beneficiary patient.*
3. *Dispensing Counter showing the uniformly labeled dispensing bottles.*
4. *Dr. Albert Schnee, chief of Professional Services, discussing procedure with Chief Pharmacist Wilson.*



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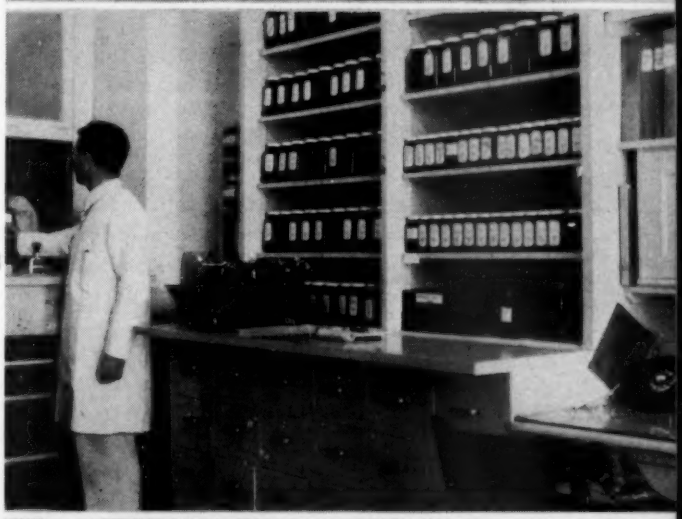

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4

MEET A VETERANS ADMINISTRATION PHARMACIST

Terry B. Nichols

TERRY B. NICHOLS, chief pharmacist, VA Domiciliary, Thomasville, Georgia and a native of Tennessee, received his B.S. degree from Howard College, Birmingham, Alabama in 1949, and for a short time was engaged in the practice of retail pharmacy. Prior to accepting his present position he was chief pharmacist at the Obion County General Hospital, Union City, Tennessee. Mr. Nichols served in the U. S. Navy as a Midshipman at the Naval Academy, Annapolis, Maryland.

He is secretary and a charter member of the Georgia Society of Hospital Pharmacists as well as a member of the A.Ph.A., the ASHP, and the Southeastern Society.

The pharmacy in the Veterans Administration Domiciliary is located in the main section of the medical department and provides complete pharmacy service for more than 500 members and the infirmary. The pharmacy consists of one unit containing 900 square feet divided by two sets of shelves into two sections. One section is used for dispensing and compounding of all prescriptions while the other provides an office where detail men are seen as well as all the manufacturing and prepacking of drugs. The staff is composed of one pharmacist and a pharmacist helper. Prescriptions and drug orders are received from 8 until 12 AM and from 3 PM until 4:30 PM with the time from 12:30 PM to 3 PM being used for the manufacturing of medications and emergency issues. There are very few off duty calls for the pharmacist because the infirmary is stocked with two containers of each medication. When one bottle becomes empty it is returned to the pharmacy to be refilled and the duplicate container remains available.

The basic Veterans Administration Formulary, supplemented by the addition of proprietary drug items standardized for use at the Domiciliary, has proven useful to the entire medical staff. At the VA Domiciliary we treat each request for medication as a new prescription. A new prescription must be prepared by the sick call doctor to obtain a refill of any medication.

A considerable saving to the activity is effected through the manufacturing program even though, of necessity, the scope of our program is somewhat limited. There is a very complete library composed of the latest reference books and many pharmacy and scientific journals including those of the A.Ph.A. and ASHP in the pharmacy which is used by members of the medical and other professional staffs.

One of the most useful additions to the pharmacy has been the storage rack for gallon bottles. Thirty-six gallon containers are stored in a space of 42 x 48 inches.

LEFT: *Pharmacy at VA Domicilary, Thomasville, Ga. showing Pharmacy Helper Frank Olah and Chief Pharmacist Terry B. Nichols.*

RIGHT: *Storage Rack for Gallon Bottles.*

A.S.H.P. AFFILIATES

Midwest Association

The December meeting of the Midwest Association of Hospital Pharmacists was held at Saint Catherine Hospital in Omaha, Nebr. with Sister Mary Fidelis, R.S.M. as hostess. During the business session, Sister Mary Eugene, R.R.L., discussed the points which are stressed for the various departments with particular reference to the pharmacy, in connection with accreditation of hospitals. Included also on the program was a discussion of narcotic control.

Arizona Society

The Arizona Society of Hospital Pharmacists has announced the following subjects on hospital pharmacy to be covered at the regular meetings during the year:

1. The Hospital (Classification, Organization, Ethics, Standards, etc.)
2. Pharmacy (Definition, Development, Influence, History, etc.)
3. Responsibilities
4. Classification and Organization
5. Pharmacy and Therapeutics Committee and Formulary
6. Purchase and Supply
7. Laws and Controls (Alcohol, etc.)
8. Narcotics and Hypnotics (Inventory, Control, etc.)
9. Manufacturing

As a group project for the year, the Arizona Society will write a history of Arizona Hospitals. Individual members will write a history of his or her institution and the material will be correlated by Dr. Doris Hawkins.

Southern California

Charles G. Towne, administrative chief pharmacist of the VA Regional Office, Los Angeles, has been elected president of the Southern California Chapter. Mr. Towne has been active in the national organization having served on the executive committee during the past year. Other new officers of the Southern California Chapter are Vice-President Edith Loustelet, Recording Secretary Alice Appel and Treasurer Ikuko Ito.

Georgia Society

The Georgia Society of Hospital Pharmacists held its quarterly meeting on October 25-26 at the Bon Air Hotel in Augusta with a record attendance of 30. International, national, regional and local pharmacy problems high-lighted the business session. A report of the meetings of the ASHP Decennial and the American Pharmaceutical Association's Centennial held in Philadelphia in August was presented by President Johnnie Crotwell, Atlanta. Miss Crotwell also told of the meetings of the Pharmaceutical Society of Great Britain and the International Federation to be held in London and Paris in 1953. Miss Evelyn Peacock of Atlanta, reported on the annual meeting of the American College of Apothecaries, also held in conjunction with the A.Ph.A. convention, and Jack Kirkland, Atlanta, told of the activities at the semi-annual meeting of the Southeastern Society which was held in Birmingham early in October.

R. O. Doughety, director of University Hospital, Augusta, was the principal speaker discussing "Trends in Patient Care." He stressed the important role of the hospital pharmacists in this trend.

Indiana Chapter

Members of the Indiana Chapter met in Indianapolis for a two-day meeting on October 18 and 19. The principal speaker was Harold A. Raidt, assistant professor of microbiology at Indiana University Medical Center. He spoke on "Sterilizing Media," discussing the various methods of testing sterilizing media. Other papers presented during the meeting included one on "Servicing the Small Hospital," by Rhea Thomas; and the "Pharmacy and Therapeutics Department of a Hospital," by Mr. William O. Wissman.

Greater New York

Sisters of the Greater New York Chapter of the ASHP met at St. Joseph's Hospital in Yonkers for the November 19 meeting. The principal speaker was Martin J. Healy, Jr., M.D., F.A.C.S., director of Surgery at St. Joseph's Hospital and a Diplomate of the American Board of Surgery. His topic, "Antibiotics in Present Day Use," presented the relative values and uses of the more frequently prescribed antibiotics.

Greater St. Louis

Members of the Hospital Pharmacists Association of Greater St. Louis met at St. Mary's Hospital on November 9 at 2 P.M. Included on the agenda was a discussion of the possibility of inaugurating courses in hospital pharmacy at the St. Louis College. Mr. C. Rabe from the School of Pharmacy was present to discuss the matter with hospital pharmacists and a special committee including Norman Hammelman, chairman; Sister Mary Berenice and Florence Mueller, was appointed to work out a plan.

There was also a discussion of the national organization's Committee to Study the Role of the Pharmacist in Small Hospitals and a Committee was appointed to study the situation in the St. Louis Area and report to the national group.

Hospital pharmacists in St. Louis are participating in a pilot study of the Proposed Point Rating Plan being carried out by the ASHP Committee on Minimum Standards.

Akron Area Society

Mrs. Evlyn Gray Scott discussed the *Minimum Standard* and its application in accordance with the

Proposed Point-Rating Plan at the October meeting of the Akron Area Society.

Members of the Akron Area group attended an organization meeting of the Society of Columbus Hospital Pharmacists on December 6. Officers of the new Columbus group are President Robert Bowers, Vice-President Howard Schneider, Secretary Kenneth Jackson and Treasurer Alfred W. Snider.

Cleveland Society

Twenty-six members and guests were present for the December 3 meeting of the Cleveland Society of Hospital Pharmacists. Highlighting the discussions was a report on the advantages and workability of the filing index now in use at St. Luke's Hospital. This has been a "Project" of the Cleveland Group under the national plan for promoting activities in the affiliated groups.

Maryland Association

The Maryland Association of Hospital Pharmacists met in conjunction with the Annual Conference of the Maryland-District of Columbia-Delaware Hospital Association in Wilmington, Del. on November 11. The program included a talk on a sterile solution program for hospitals by Herbert L. Flack, chief pharmacist at Jefferson Medical College Hospital in Philadelphia and a discussion of "A Pricing System for a General Hospital" by Robert Bogash, chief pharmacist at Lennox Hill Hospital in New York City. The program was in charge of J. Robert Cathcart, The Delaware Hospital, Wilmington.

Philadelphia Association

Members of the Philadelphia Hospital Pharmacists' Association met at Jefferson Medical College Hospital on January 20. Guests included supervisory personnel of the hospitals since the program included several films of interest to this particular group.

Western Pennsylvania Society

The Western Pennsylvania Society of Hospital Pharmacists was host to the Pittsburgh A.Ph.A. Branch at the November 5 meeting held at Pittsburgh Hospital. Present for the joint meeting were educators, retail pharmacists and manufacturers' representatives as well as hospital pharmacists. Mr. James Datillo, chief bacteriologist at the VA Hospital in Aspinwall, was the guest speaker. He discussed the "Prevalence of Amoebiasis and Undetected Cases."

Midwest Sister Pharmacists

"Use of Atomic Energy in Medicine" was discussed at the November 21 meeting of the Midwest Association of Sister Pharmacists. Included also on the program was a presentation of a method for filing literature by Sister Regina Marie of St. Mary's Hospital, Madison, Wis.

Massachusetts Society

Members of the Massachusetts Society of Hospital Pharmacists met at the U.S. Public Health Service Hospital in Brighton on November 19. Following a short business meeting, a round table conference was held with Mr. Al Rosenberg acting as moderator.

Puget Sound Area

Members of the Society of Hospital Pharmacists of the Puget Sound Area met for a dinner meeting on January 13. Highlighting the program was a discussion on the "Therapeutic Committee's Program in Hospitals," led by Mr. Roberts Proper of the Public Health Service Hospital, Seattle. During the business session, Mr. Fred E. Boehm, Tacoma, was appointed chairman of the Committee on Legislation and Public Relations.

Oklahoma Society

The Oklahoma Society of Hospital Pharmacists has applied for affiliation with the ASHP. The president of the Society is Mr. Ralph Reed, manager of the Student Health Service at the University of Oklahoma. Other officers are Vice-President Marguerite Jones, chief pharmacist at Hillcrest Memorial Hospital, Tulsa; and Secretary-Treasurer Sister M. Teresa, assistant administrator and chief pharmacist at St. Anthony Hospital, Oklahoma City.

Mr. E. R. Weaver, secretary of the Oklahoma State Pharmaceutical Association and president of the National Conference of State Secretaries, addressed the Oklahoma Society of Hospital Pharmacists at the October 15 meeting. Mr. Weaver reported on the highlights of the Centennial meeting of the A.Ph.A. and the documentary record of the centennial events was presented by Dr. Ralph Clark. Sister M. Teresa reported on the ASHP Decennial Meeting, bringing greetings from the national organization to members of the Oklahoma group.

Rochester Society

The Society of Hospital Pharmacists of the Rochester (N.Y.) Area has recently organized and applied for affiliation with the national organizations. Elected president of the new Society is Mr. Warren Jacobs, V.A. Hospital, Canandaguia. Other officers are Vice-President Paul Schiafano, Hichland Hospital, Rochester; Secretary Myrna Williams, Strong Memorial Hospital, Rochester; and Treasurer Alvina Morse, St. Mary's Hospital, Rochester.

North Carolina Society

Members of the North Carolina Society met in Chapel Hill on January 17. Following a dinner sponsored by the Eli Lilly Company, the official business meeting was held at the Institute of Pharmacy Building in Chapel Hill. Mr. Wesley Collier served as moderator for a panel discussion which covered emergency outpatient orders, formularies, procedures for purchasing and pharmacy hours.

Tri-State Council

Three affiliated chapters of the ASHP — Connecticut, Massachusetts and Rhode Island—have joined together to form the Tri-State Council of Hospital Pharmacists. These groups will participate in the Pharmacy Section of the New England Hospital Assembly scheduled for March 23 at 2 P.M. Meetings will be held at Hotel Statler in Boston. The pharmacy panel will include discussions on the following subjects: Aquisition of Supplies in the Pharmacy; Appraisal of the New Interpretations of Federal Regulations on Narcotic Control; Management of the Central Sterile Supply; Management of the Pharmacy in the Small Hospital; Professional Relationships of the Pharmacist with Special Reference to the Medical Staff; and Professional Relationships of the Pharmacists with Special Emphasis on Nursing.

as the president sees it

GROVER C. BOWLES
Strong Memorial Hospital, Rochester, N. Y.

The first meeting of the Executive Committee since the Philadelphia Convention was held on December 28 at St. Mary's Hospital in St. Louis with Sister Mary Berenice, Chairman of the Committee on Minimum Standards, acting as host. Fortunately all members of the committee were present and a full day, 9:30 a.m. to 6:30 p.m., was spent discussing Society problems and receiving reports from the various committees. Don Francke, on hand by invitation, reported on BULLETIN activities and the Division of Hospital Pharmacy.

The reports of the committees indicate considerable activity in all areas. Our membership continues to increase and three new local groups—Columbus, Ohio; Oklahoma; and Rochester, New York;—have been formed. The Oklahoma and Rochester groups have applied for affiliation.

A.A.A.S. MEETING

Staying on in St. Louis for a few days to participate in the American Association for the Advancement of Science meeting proved interesting and informative. This was my first A.A.A.S. meeting and I was impressed with the prominent place which hospital pharmacy occupied on the Pharmacy Subsection program. George Archambault who headed the program committee is to be congratulated for his effort in bringing together leaders in pharmaceutical education, hospital administration, hospital accreditation and hospital pharmacy to discuss the many problems of implementing standards for hospital pharmacies, accrediting hospital pharmacy internships, and the content of hospital pharmacy courses offered in the colleges of pharmacy. Discussions of this type do much to further harmony among the groups so closely allied with hospital pharmacy.

INSTITUTE PLANS

The Institute Planning Committee met in Chicago January 24 to discuss the 1953 Institute on Hospital Pharmacy. This year the Institute will be held on the Loyola University Campus in Los Angeles June 15-19 and, as in past years, will be jointly sponsored by the American Hospital Association, the American Pharmaceutical Association, and the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS. Plans are still in the embryo stage; however, I can assure you that a week of concentrated review embracing fundamentals and new developments in hospital pharmacy will be presented.

While in Chicago, I attended the meeting of the Policy Committee Division of Hospital Pharmacy. A number of problems confronting the Division were discussed with Minimum Standards for Pharmacy Internships in Hospitals occupying a major part of the agenda. The SOCIETY is represented on this important committee by the President, the Editor of THE BULLETIN and two people appointed by the president. This year Walter Frazier and Arthur Purdum fill the appointed positions.

Attending these various committee meetings and discussing the many problems of the day concerning hospital pharmacy, points out an ever growing need for a membership which is well informed not only on the technical aspects of hospital pharmacy, but also the importance of our relationship with the other groups in the medical care field.

NEWS ITEMS

A. Ph. A. Election Results

The newly elected officers of the American Pharmaceutical Association who will be installed at the close of the annual convention to be held in Salt Lake City during the week of August 17 are: *President-Elect,* F. Royce Franzoni, Washington, D. C.; *First Vice-President-Elect,* John A. MacCartney, Detroit, Mich.; and *Second Vice-President-Elect,* Joseph B. Sprowls, Philadelphia, Pa.

Don Francke was re-elected for a three year term as a member of the Council. Another hospital pharmacist presently serving a three-year term which expires in 1954 is W. Arthur Purdum. Other members-elect of the Council are Roy L. Sanford, Enid, Okla. and Robert L. Swain, New York, N. Y.

ASHP Election Results

Allen V. R. Beck, chief pharmacist at Indiana University Medical Center, Indianapolis, has been elected president of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS for the 1953-1954 term. Mr. Beck has been a member of the executive committee for the past two years having served as chairman of the Committee on Program and Public Relations and of the Committee on Membership and Organization. He is a graduate of Purdue University and has held his present position since 1945.

The vice-president-elect, Miss Adela A. Schneider, is chief pharmacist at Southern Pacific Hospital in Houston, Texas. She is a graduate of the University of Texas and has been active in pharmaceutical organizations, both locally and nationally. She has served as secretary of the Texas Society, and is president for the 1953 term.

Mrs. Anna D. Thiel, treasurer-elect, is chief pharmacist at Jackson Memorial Hospital in Miami, Fla. She is a graduate of the Massachusetts College of Pharmacy and a charter member of the ASHP. Mrs. Thiel has been active in the national organization, and has served as president of both the Southeastern Society and the Florida Society.

The secretary of the SOCIETY is nominated by the executive committee and elected annually by the ASHP House of Delegates.

Announcement of the election results was made by a committee appointed by President Bowles. Included on the committee were Henry Beard, Franklin Cooper and Dominic Spiotti, all of Washington; and William Heller, Baltimore.

The new officers will be installed at the annual convention to be held in Salt Lake City, Utah during the week of August 16, 1953. Present officers of the ASHP who will continue to function until the 1953 convention are: president, Grover C. Bowles, Rochester, N. Y.; vice-president, George L. Phillips, Ann Arbor, Mich.; secretary, Gloria Niemeyer, Washington, D. C.; and treasurer, Sister Mary Florentine, Columbus, Ohio.

1953 Annual Meeting

The 1953 annual meeting of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS will be held in conjunction with the A.Ph.A. Convention in Salt Lake City, Utah, August 16-23. Paul Bjerke, chief pharmacist at Luther Hospital in Eau Claire Wis., is chairman of the Program Committee. Papers for contribution to the program should be forwarded to him for review not later than May 15. Local chapters will want to make a special effort to present the results of completed projects to the SOCIETY at the annual meeting.

The exact time of the meetings of the ASHP has not yet been set; however, it is probable that hospital pharmacists will want to be present during the entire week. In order that there will be a representative group present, we would like to make it possible to let people from the various areas know of anyone who will be driving and have space for additional passengers. Those who are interested in such a plan could work through their local groups or write to the ASHP secretary. In this way, we may be able to put people in contact with someone who will be driving and has space for additional passengers.

A. A. C. P. Passes Resolution

The following resolution was passed by the American Association of Colleges of Pharmacy at its recent annual meeting:

Whereas hospital pharmacy has developed to that point that it is a field of specialization; and

Whereas there are several versions of what should constitute programs of specialized education and training in this area of pharmacy; and

Whereas it is the function of colleges of pharmacy to develop and offer curricula in all areas of pharmacy; and

Whereas certain proposals to govern such training have been made by organizations other than the colleges of pharmacy of the American Association of Colleges of Pharmacy.

Be It Resolved that this matter be studied jointly by the Division of Hospital Pharmacy of the American Pharmaceutical Association, the Committee on Minimum Standards of the AMERICAN SOCIETY OF HOSPITAL PHARMACISTS and the American Association of Colleges of Pharmacy; and,

Be It Further Resolved that this Association feels that training in hospital pharmacy not complemented with or accompanied by further academic training is not in the best interest of the future development of hospital pharmacy and the profession.

Executive Committee Meets

The ASHP Executive Committee held its annual meeting at St. Mary's Hospital in St. Louis, Mo. on December 28. All members of the Committee were present including Grover C. Bowles, George L. Phillips, Gloria Niemeyer, Sister Mary Florentine, Allen V. R. Beck, Paul Bjerke, Sister Mary Berenice, Henry Beard and Walter M. Frazier. Don E. Francke, as Director of the Division of Hospital Pharmacy and Editor of THE BULLETIN, was present by invitation. Dr. Robert P. Fischelis was also asked to attend the sessions but was unable to be there.

Progress reports were received from all officers and committee chairmen showing a great deal of activity in all phases of SOCIETY work. Allen Beck, chairman of the Committee on Membership and Organization, reported that membership in the Society had now reached approximately 2100 and several new groups are planning to affiliate with the national organization. For membership purposes, the States have been divided into ten areas with a membership chairman for each section.

The chairman of the Program and Public Relations Committee, Paul Bjerke, reported on tentative plans for the 1953 meeting, the possibility of working out plans for an exhibit for use by local groups and work toward publication of articles on hospital pharmacy in the hospital publications.

Sister Mary Berenice reported that the Committee on Minimum Standards has proceeded with pilot studies of the Proposed Point-Rating Plan and it is anticipated that copies of the Plan will be distributed to local groups for study and self-evaluation.

The Executive Committee also reviewed the budget in the light of future activities as well as

arranging to pay the debt incurred in connection with the Decennial events.

Reports were also received on the activities of the special committees including the Committee to Study the Role of the Pharmacist in the Small Hospital, the Committee on Special Projects and the Committee on International Activities. Mr. Francke as chairman of the latter Committee, reported on plans for a Hospital Section at the meeting of the International Federation to be held in Paris in September. He also informed the group that a number of hospital pharmacists had become members of the Federation and approximately fifteen hospital pharmacists would be going to the meeting. The Executive Committee voted to appoint the secretary as the Society's official representative, although all members participating will be part of the delegation.

The Executive Committee went on record as approving in principle the report of the 1952 committee on Narcotic Regulations and recommended that the study be carried further. Specifically, the Committee will be instructed to proceed further toward investigating the possibility of providing a separate tax class for hospitals which have a pharmacist.

International Pharmaceutical Federation

Hospital pharmacists from many lands will meet in Paris September 14 to 18 in conjunction with the Fifteenth General Assembly of the International Pharmaceutical Federation. Plans are being formulated to establish, for the first time, an official Section on Hospital Pharmacy in the Federation. A committee headed by Dr. Jean Cheymol of France is now developing a program for the Section on Hospital Pharmacy.

In order to allow ample time for all who may wish to present papers, it has been decided to request each author to present a ten minute resume of his work and to submit the complete paper for publication. A resume of each paper will be presented in both French and English. Hospital pharmacists who wish to present a paper at the Federation meeting should write to the U.S. member of the committee, Don E. Francke.

A more complete account of the Federation meeting will be included in the March-April issue of THE BULLETIN.

Plans are now being made for a group of American pharmacists to attend the meetings of the International Pharmaceutical Federation as well as of the British Pharmaceutical Conference. The dates of the meetings are as follows:

British Conference in London	Aug. 31 to Sept. 4
Open dates	Sept. 5 to 12
International Federation in Paris	Sept. 14 to 18
F.I.P. Excursions in France	Sept. 19 to 20

The general plan is to leave New York by plane Saturday, August 29, arriving in London Sunday morning. A short orientation tour of London is being arranged for Sunday, to be followed by registration for the Conference. One or two additional tours to nearby points are to be arranged during the week. For the open dates, several different plans are now being considered, although these will, of course, be optional. Registration for the Federation will take place Sunday, September 13 in Paris. Additional information on these plans may be obtained by writing to the Editor of THE BULLETIN. Those who wish to enroll as an associate member of the International Pharmaceutical Federation and to receive its *Bulletin* may do so be sending their name, title, and address together with $2.75 to Don E. Francke, University Hospital, Ann Arbor, Michigan.

Joint Accreditation Commission

A Ceremony conveying the Hospital Standardization Program from the American College of Surgeons to the Joint Commission on Accreditation of Hospitals was held in Chicago on December 10. Don Francke, director of the Division and editor of The Bulletin, was present for the Ceremony. The tremendous challent to the Commission in its assurance to the public of continued high standards of patient care was the theme of the formal ceremony. The guest speaker, Senator Hill, spoke of the new responsibility of the Commission emphasizing the overall importance of integrity in the final accounting to the public.

Dr. Edwin L. Crosby is director of the Joint Commission and the Board of Commissioners is made up of representatives of the American College of Physicians, the American College of Surgeons, the American Hospital Association, the American Medical Association and the Canadian Medical Association.

Accepts N. C. Position

MR. CLAUDE PAOLOHI, formerly chief pharmacist at the Sidney Hillman Medical Center in Philadelphia, has accepted the position as chief pharmacist at the Moses H. Cone Memorial Hospital in Greensboro, N. C.

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JANUARY 1, 1953

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Argo, James R., P. O. Box 155, Millbrook
Elliott, James M., 5653 Atlanta Highway, Birmingham
Potts, Lt. John A., USAF (MSC), 3810th Med. Gp., Clinical Lab. Off., Maxwell AFB, Montgomery
Rice, Brenice G., Kendrick Memorial Hospital, Luverne

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Sharpe, James S., 4906 Bethany Rd., Glendale

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Hopson, Herman G., 2538 S. Bronson, Los Angeles
Loewe, Mitchel, 12137 Sardis Ave., West Los Angeles

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Williams, William O., 27 Shadynook Ave., Baltimore

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Sister Jean Marie Carpentier, St. Vincent Hospital, Worcester
Sister Mary Paraclita, 679 Dwight St., Holyoke
Sister Mary Robertine (Herrmann), Providence Mother House, Holyoke
Turner, Dr. Edward B., 12 Homestead St., Roxbury

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McKeever, Thomas V. Jr., 17720 Libby Rd., Maple Heights

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Dicken, Allen H., 48 N. Spring St., Everett
Fuller, John A., 77 N. Main St., Spring Grove
Hope, Donald W., University & Woodland Aves., Philadelphia
Matchett, Kenneth J. Jr., Jefferson Med. Coll. Hospital, Philadelphia
Showalter, Clarence E., 739 Chestnut St., Latrobe
Sister Louise de Paul O'Brien, Pittsburgh Hospital Assoc., Pittsburgh

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Collins, Leslie E., 4503 Yew Lane, Tacoma
Williams, Fred L., Vet. Clinic, Wash. State College, Pullman

CANADA
Silversides, Franklin H., Aberdeen & Main Sts., Winnipeg, Manitoba

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1953 MEETING DATES

Southeastern Hospital Conference—April 8-10; New Orleans.

Southeastern Society of Hospital Pharmacists—April 8-10; New Orleans.

Mid-West Hospital Conference—April 15-17; Kansas City, Mo.

Association of Western Hospitals—April 27-30; Salt Lake City.

Tri-State Hospital Assembly—May 4-6; Chicago.

Upper Midwest Hospital Conference—May 13-15; Minneapolis.

Middle Atlantic Hospital Assembly—May 20-22; Atlantic City.

Catholic Hospital Association Institute on Hospital Pharmacy—May 23-27; Kansas City, Mo.

Catholic Hospital Association—May 24-28; Kansas City, Mo.

International Hospital Federation—May 25-30; London, England.

American Hospital Association Institute on Hospital Pharmacy—June 15-19, Los Angeles, Calif.

American Pharmaceutical Association — August 16-21; Salt Lake City.

American Society of Hospital Pharmacists—August 16-21; Salt Lake City.

American Hospital Association—August 31-September 3, San Francisco.

International Pharmaceutical Federation—September 14-19, Paris, France.

POSITIONS IN HOSPITAL PHARMACY

POSITIONS OPEN

ASSISTANT PHARMACIST—immediate opening in 350-bed general hospital. Experienced woman preferred. Salary commensurate with experience and training. Eastern resort city. For further information write to the Division of Hospital Pharmacy, 2215 Constitution Avenue, N. W., Washington 7, D. C. (PO-1).

MICHIGAN—immediate opening for assistant chief pharmacist. Woman preferred. Salary plus full maintenance. Send applications to Miss Dorothy E. Tobin, W. A. Foote Memorial Hospital, Jackson, Mich.

NORTH CAROLINA—300-bed, air-conditioned, general hospital has opening for two staff pharmacists with B.Sc. degree. Positions available immediately. For further information write to Mr. J. M. Thornton, Personnel Director, The Moses H. Cone Memorial Hospital, 1200 North Elm St., Greensboro, N. C.

STAFF PHARMACIST—44 hour week. Paid vacations, paid holidays, eligible for pension program, Social Security, Blue Cross, Blue Shield. Salary commensurate with experience and training. Pleasant suburban environment in expanding 460 bed hospital, located in eastern Pennsylvania. Apply Director of Personnel and Public Relations, The Reading Hospital, Reading, Pa.

PHARMACIST—Opening for a registered pharmacist and manager of hospital (combined position). Apply, McCulloch-Concho Hospital, Melvin, Texas.

PHARMACIST, LICENSED—to assist Chief Pharmacist in a 400-bed general hospital. Experience helpful but not essential. Salary based on training and experience; three weeks' vacation, six paid holidays, sickness benefits, retirement plan, Social Security. Apply Personnel Director, The Rochester General Hospital, Rochester 8, N. Y.

The following openings in hospital pharmacy appeared in current issues of hospital publications. Anyone interested in the positions should write directly in the Agency indicated. A fee is charged when positions are secured through the services of a personnel agency.

WANTED—(a) Pharmacist to head newly established department, well established group, staff of 13 specialists; Middle West. (b) Chief Pharmacist, duties include purchasing as well as compounding of drugs; new hospital currently under construction; teaching affiliations; large city, medical center; Middle West; $5,000. (c) Assistant Chief Pharmacist, 600 bed teaching hospital; university city; West. (d) New voluntary general hospital, 250 beds; metropolitan area of the East. (e) Staff; new hospital, 200 beds; affiliated with 35-man group; university resort city, West. (f) Staff; recent graduate eligible; voluntary general hospital, 450 beds; suburban location; East. (g) Staff Pharmacist; possibility of becoming chief new air-conditionel pharmacy; 400-bed general hospital; college town; Middle West; minimum $350. (h) Chief, 400-bed hospital, seaport city, South. (Please send for an ANALYSIS FORM so we may prepare an Individual Survey for you.) Medical Bureau, Burneice Larson, Director, Palmolive Bldg., Chicago.

POSITIONS WANTED

WOMAN PHARMACIST with experience in both retail and hospital pharmacy desires position in Texas, Arizona or New Mexico. B.S. Duquesne University School of Pharmacy (1951). For further information write to Miss Dorothy Blumer, 1003 W. Exchange St., Akron, Ohio.

PHARMACIST—B.S. in Pharmacy, one of the leading universities; two years experience as hospital pharmacist, three years staff pharmacist, large teaching hospital. For further information please write Burneice Larson, Medical Bureau, Palmolive Building, Chicago.

INTERNSHIPS ANNOUNCED

Internships available in 1953 have recently been announced by The Johns Hopkins Hospital in cooperation with the Graduate School of the School of Pharmacy, University of Maryland; and by the Greenwich Hospital, Greenwich, Conn. in cooperation with Columbia University College of Pharmacy.

Those interested in the course at Johns Hopkins may direct letters of application to Russell A. Nelson, M.D., Director, The Johns Hopkins Hospital, Baltimore 5, Md. not later than April 1, and appointments will be announced on or before May 15, 1953.

Applications for the course offered by Columbia University should be sent to Dr. E. Emerson Leuallen, Dean of Columbia University College of Pharmacy, 113-119 West 68th St., New York 23, N. Y.